GE Fanuc Automation

Industrial Computer Products

Marathon Series
Industrial Computers and Monitors

User's Manual

GFK-1791A *April 2001*

Warnings, Cautions, and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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CIMSTAR	Modelmaster	Series 90	VersaPro
Field Control	Motion Mate	Series Five	VuMaster
GEnet	ProLoop	Series One	Workmaster

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Chapter 1 Product Features

A Marathon computer, with a Pentium™, AMD™, Celeron™, or PIII™ processor, combined with one of the many Marathon display options, can run virtually any application efficiently, crunching through even the most complex algorithms at amazing speeds.

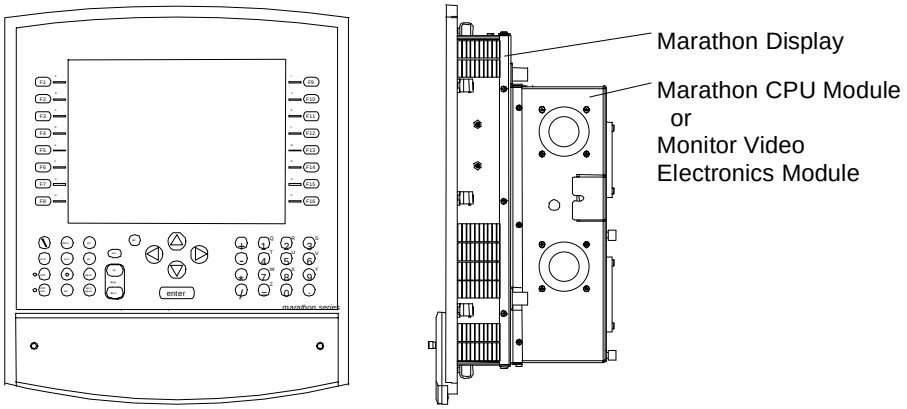
State-of-the-art panel mounting and connecting systems make it perfect for the shop floor or control area. Built for harsh environments, a Marathon flat-panel computer will give you many years of trouble-free service. Flexible and robust, Marathon computers make it easy for operators to monitor and interact with machines and industrial processes. They give you the features you need and connectivity that's second to none. Because they're open-system machines, they'll easily expand with your business.

Available in a full range of sizes, Marathon Flat Panel Displays offer an array of features and options to complement their superior resolution and wide-angle visibility. Durable and sensitive analog resistive touchscreens, and optional integrated membrane keypads increase the adaptability of Marathon industrial monitors to your needs.

Innovative Modular Design

Marathon computers and monitors incorporate a unique modular design for quick installation that dramatically reduces your downtime. You can connect the CPU module or Monitor Video Electronics module to a Marathon Display package simply and easily. Because Marathon series CPU modules work automatically with any size display, you can greatly reduce your spare parts inventory costs. The modular design also allows for fast and easy future upgrades.

The following drawing shows a Marathon Display with a CPU module attached.



Factory Ready

Designed and built to withstand harsh, demanding environments, Marathon monitors are the perfect tools for delivering information on the factory floor.

- Substantially smaller in size, they fit easier in any location
- Modular design allows for speedy installation and removal
- Increased reliability reduces downtime in your factory
- Lower power consumption rate means reduced operating costs and lower temperature
- Immunity to electromagnetic emissions, resistance to vibration, and a wider operational temperature range enhance flexibility of placement

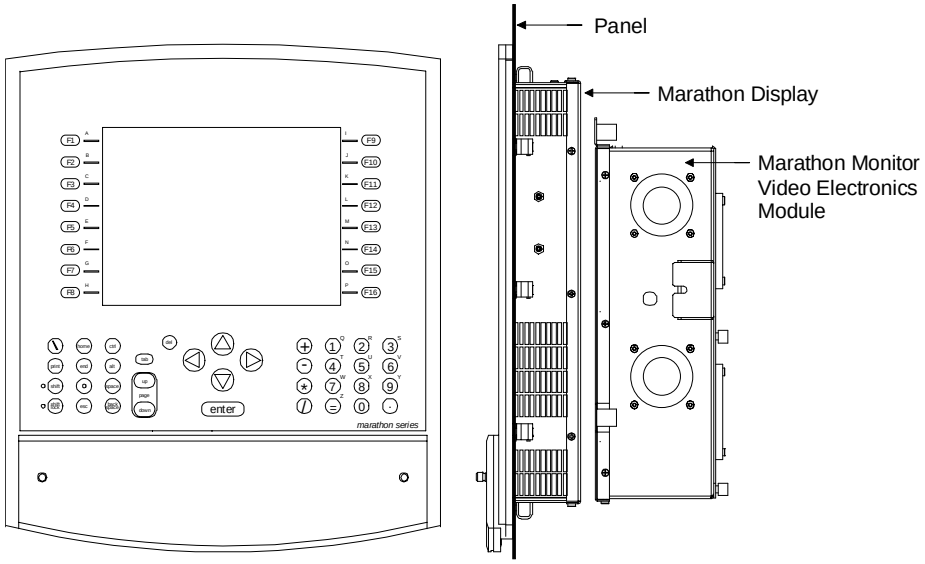
Connectivity

A Marathon series industrial computer is the ideal choice for plant floor communications. The CPU module contains on-board Ethernet (10/100 Mbps), dual USB (Universal Serial Bus) ports, dual RS-232 COM ports (one used by touchscreen) and an IrDA port so that you can connect without the need for additional hardware.

Marathon Display Modules

Combine a 12.1", 15", or 18.1" Marathon Display module with a CPU module to create an industrial computer package. Combine a 12.1" or 15" Marathon Display module with a Monitor Video Electronics module for a stand-alone industrial monitor. The Marathon Display module is installed in the panel cutout with clips. The CPU module and the Monitor Video Electronics module are installed on the Marathon Display module using clamps.

The following drawing shows a Marathon Display Module with a Monitor Video Electronics module. The Video Electronics module has the same dimensions as the MSCPU computer module.



Features

Displays	12.1" SVGA 800 x 600 pixels 15.0" XGA 1024 x 768 pixels 18.1" SXGA 1280 x 1024 pixels
High Performance	Direct CRT replacement Compatible with VESA compliant video signals Analog Resistive touchscreen with serial output Auto-sizing Standard 15 pin VGA input Optional function keypad Front or side-accessible keyboard port
High Visibility	TFT Active Matrix Color

Modular Simplicity

Unlike systems that require a specific PC bus video card, Marathon series flat-panel monitors with state-of-the-art technology connect directly to your video sources using standard DB15 connectors. This makes connecting our flat-panel monitors to such non-PC compatible platforms as VMEbus or

Macintosh easy. For even greater convenience, you don't need a drill or screws to mount a Marathon monitor in a panel—it simply clips in place.

Rugged Touchscreens

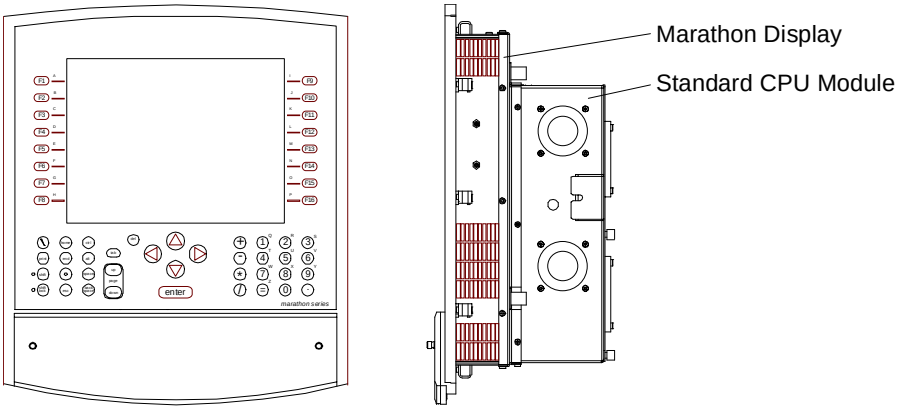
All Marathon displays come with a resistive touchscreen. Offering excellent durability and resolution, resistive technology can be used in a wide variety of applications and environments. All touchscreen Marathon series monitors come with high performance device drivers that enable the touchscreen to emulate a mouse. They can operate with any application designed to run under Windows™ 95/98, Windows NT™, or Windows 2000™. Resistive touchscreens allow operation with gloved hands.

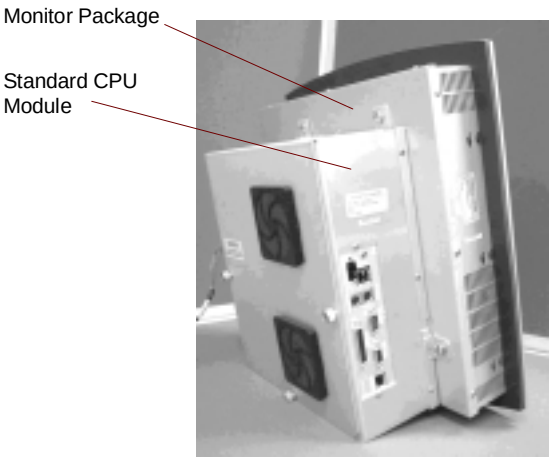
Keypad Option

The 12" and 15" Marathon Displays are available with integrated membrane keypads, making them even more adaptable to your demanding applications. The membrane keypad option is not available with the 18" Marathon display.

Marathon Series CPU Module, Standard

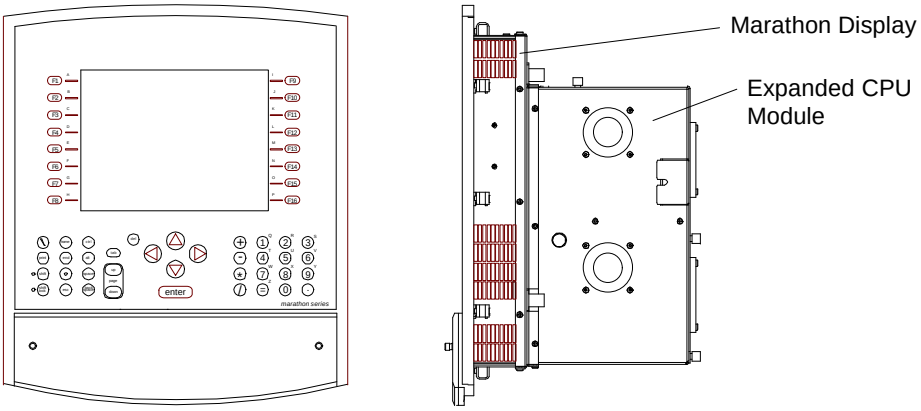
The Standard CPU module contains a powerful CPU and all the support functions required for a tough, industrial computer. The module can be connected to any of the Marathon displays, and is easily attached or removed for maintenance.

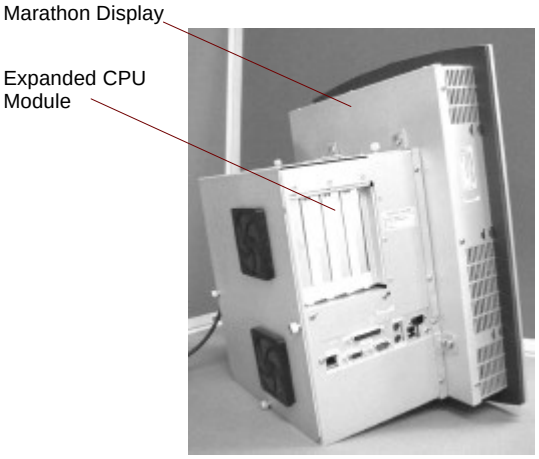




Marathon Series CPU Module, Expanded

The Expanded CPU module has the same features as the Standard CPU module with the addition of two ISA expansion slots, two shared PCI/ISA expansion slots, and a CD-ROM. The module can be connected to any of the Marathon displays, and is easily attached or removed for maintenance.





Single Board Computers

SBC-Max-2 Features

Processor	Pentium MMX or AMD-K6-2
Memory	64 MB, 128 MB
BIOS	Phoenix
L2 Cache	512K
Drives	4GB or greater IDE hard drive 1.44 MB floppy, front accessible
Screen Drivers	Windows 98 or Windows NT
Ports	10/100 Base-T Ethernet (RJ-45) Two USB Two RS-232 serial ports (One used for touchscreen) One Parallel, DB-25 Centronix compatible One VGA, DB-15 output One IrDA, Full Duplex One PS/2 Keyboard port, front or side access One PS/2 Mouse port, front or side access
Operating Systems	Windows 98, Windows NT, or Windows 2000
Power Supply	110-240VAC, 50-60Hz, 100W (@ 50°C supply only)

SBC-PII Features

Processor	Celeron or PIII
Memory	64 MB, 128 MB, or 256 MB
Expansion Slots	Two ISA, two shared PCI/ISA
BIOS	Phoenix BIOS
L2 Cache	512KB (Celeron 128KB)
Drives	4GB or greater IDE hard drive 1.44 MB floppy, front accessible CD-ROM, front accessible, R/W CD-ROM available with PIII processors
Screen Drivers	Windows 98, Windows NT, or Windows 2000
Ports	10/100 Base-T Ethernet (RJ-45) Two USB Two RS-232 serial ports (one used for touchscreen) One parallel, DB-25 Centronix compatible One VGA, DB-15 output One IrDA, Full Duplex One PS/2 Keyboard port, front or side access One PS/2 Mouse port, front or side access
Operating Systems	Windows 98, Windows NT, or Windows 2000
Power Supply	110-240VAC, 50-60Hz, 100W (@ 50°C supply only)

SBC-PII Single Board Computer Overview

The SBC-PII is an industrial-design single board computer with all the functionality of today's best desktop Intel Celeron and PIII machines. Its standard features include a Celeron or PIII CPU, Accelerated Graphics Port (AGP) video controller, 10/100BaseT Ethernet, and USB ports.

The SBC-PII provides leading edge flat panel support, including GUI Accelerator and Multimedia Engine especially for the newer color TFT LCDs. This 64-bit AGP chip includes up to 4Mbytes SDRAM video memory for maximum color depth in all resolutions and operating systems. The CT69000 also supports YUV and NTSC input with RGB conversion for CRT and provides display centering and stretching features for optimal presentation of VGA graphics and text on 800x600 and 1024x768 panels.

The SBC-PII memory and storage options start with 8Mbytes DRAM and up to 256 Mbytes with one double sided non-registered DIMM. The IDE hard disk interface supports up to four IDE (ATA/ATAPI) drives. The floppy disk controller supports two 1.44Mbyte or 2.88Mbyte floppy drives.

Other I/O features include two USB ports for extra peripheral interfaces, up to four serial ports (one with IrDA interface), slot or header option, a printer port, plus standard keyboard header, PS/2 mouse and PC speaker. Advanced power management with timed power down, wake-up on LAN, PS/2 mouse or Keyboard triggers. Completing the list of features is PCI/ISA bus expansion using a PISA option card.

SBC-PII Detailed Feature Description

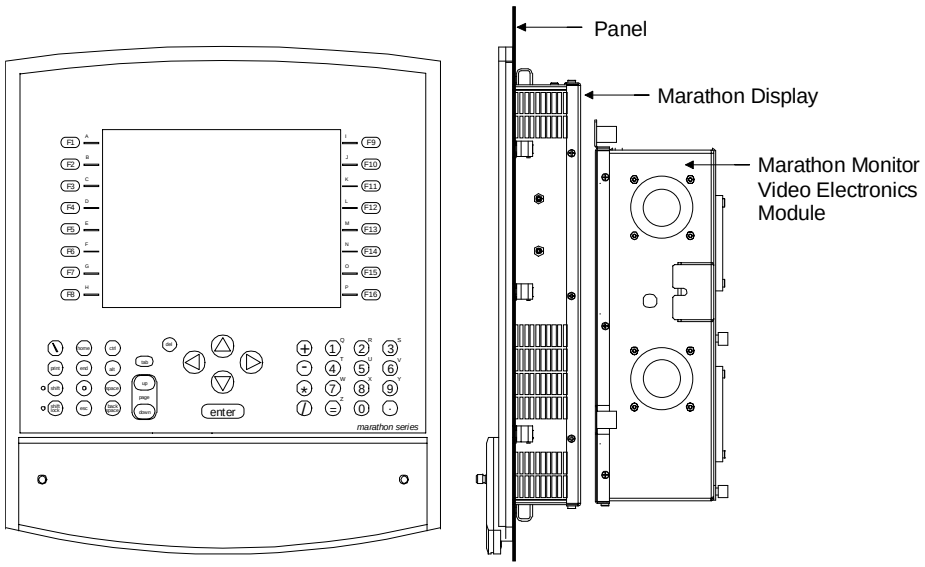
Processor	Intel PIII available with 700MHz or above core frequencies with 512KB level two cache or Intel Celeron with 566MHz or above core frequencies with 128 KB level-two cache. Binary compatible with applications running on previous members of the Intel microprocessor line
DRAM controller	SDRAM from 8 to 128 Mbytes or 256 Mbytes (with non-registered DIMMs) Up to one double-sided DIMM (2 rows memory)
PCI bus interface	PCI Rev. 2.1, 3.3V and 5V, 33MHz interface compliant
Power Management Functions	Stop Clock Grant and Halt special cycle translation (host to PCI Bus) Dynamic power down of idle SDRAM rows Independent, internal dynamic clock gating reduces average power dissipation DPMS for CRT power-down (required for support of EPA Energy-Star program) DDC for CRT Plug-Play & Display Control Supports LAN, PS/2 or keyboard wake up functions
Integrated IDE Controller	Independent Timing of Up to 4 Drives Front Panel Connector providing access to hardware Reset and IDE activity LED
Enhanced DMA Controller	
System Timer, Refresh Request, Speaker Tone Output	
USB	Two USB Ports for Serial Transfers at 1.5 or 12 Mbit/sec per UHCI Revision 1.1
SMBus	Host interface Allows CPU to Communicate via SMBus Slave Interface Allows External SMBus Master to Control Resume Events

Real-Time Clock	256-Byte Battery-Back CMOS SRAM
Multimedia Flat Panel/CRT GUI Accelerator	Highly integrated design Flat Panel and CRT GUI Accelerator & Multimedia Engine, Palette/DAC, and Clock Synthesizer Hardware Windows Acceleration — Transparent System-to-Screen and Screen-to-Screen BitBLT — 8/16/24 Color Expansion — Optimized for Windows BitBLT format High Performance deep write buffers 170 MHz RAMDAC Hardware Multimedia Support — YUV input from System Bus or Video Port — Capture / Scaling, Video Zoom up to 8x Display centering and stretching features for optimal fit of VGA graphics and text on 800x600 and 1024x768 panels Optimized for High-Performance Flat Panel Display at 3.3V and 5V — 640 x 480 x 24bpp to 1280 x 1024 x 24bpp Flexible On-chip Activity Timer facilitates ordered shutdown of the display system Fully Compatible with IBM VGA
Super I/O	PC97 compliant hardware 2.88MB floppy disk controller, supports two 360K / 720K / 1.2M / 1.44M/2.88M floppy disk drives Multi-mode high performance parallel port Serial ports – four 16C550 compatible, enhanced RS-232 ports, support SIR or ASKIR IrDA Keyboard Controller — Standard keyboard and PS/2 mouse
Ethernet	Supports 10 Mb/s and 100 Mb/s N-way auto-negotiation Supports Full duplex flow control (IEEE 802.3x) LED interface for network activity indications
PC Expansion	Supports PCI - ISA expansion board
Monitoring	Fan Monitor Power Supply Monitor
Flash drive	Disk on a Chip — Up to 144Mbytes Compact Flash/ATA

Marathon Series Monitor Video Electronics Module

Add the Marathon Monitor Video Electronics Module to a Display package for a stand-alone industrial monitor. The following drawing shows a Marathon Product configured as a stand-alone industrial monitor.

The MSMON-00 Video Electronics package is used with 12.1", and 15" displays.



Chapter 2

Marathon Monitors — Quick Install

A Marathon Industrial Monitor consists of two components: a Marathon display, and a Marathon Monitor Video Electronics module. The installation process is simple. Make a cutout in the panel, clip the Display module in place, then attach the Marathon Monitor Video Electronics module to the display package using the built-in quarter-turn clamps. If you have questions during the installation process you can contact our technical support group at 1-800-433-2682.

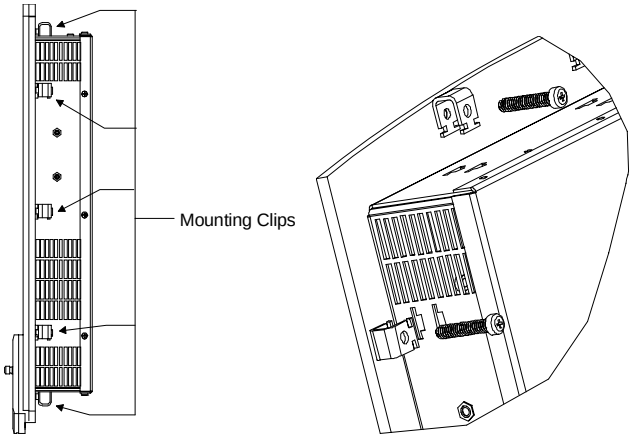
All Marathon Industrial Monitor products are fully compatible with VESA compliant Video signals.

Installing Marathon Display Modules

Each Marathon Display is assigned a model number, based on the display size and whether it has the optional keypad.

MSDIS-1200	12.1" SVGA, Touchscreen
MSDIS-1210	12.1" SVGA, with Keypads and Touchscreen
MSDIS-1500	15.0" XGA, Touchscreen
MSDIS-1510	15.0" XGA, with Keypads and Touchscreen

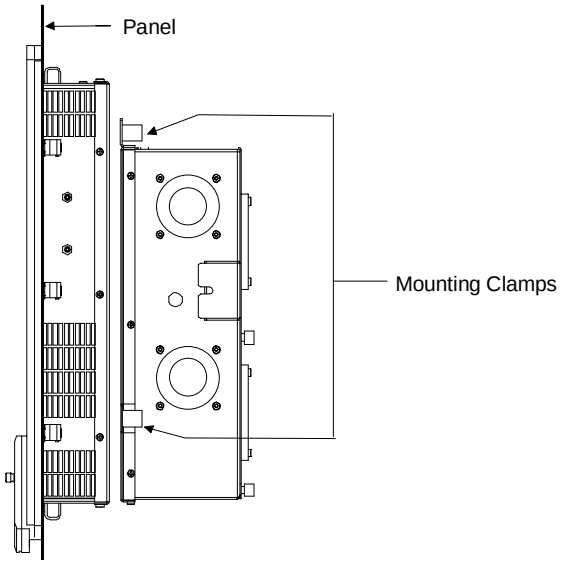
To determine the correct panel cutout, note the model number on your display and match the dimension drawing in chapter 7 of this manual with your display. Copy the panel cutout dimensions to your panel and mark the panel cutout hole. After cutting the hole, insert the display in the cutout and attach the mounting clips to the notches along the sides of the display housing. Tighten the clips and you are done with the display installation.



Installing the Marathon Monitor Video Electronics Module

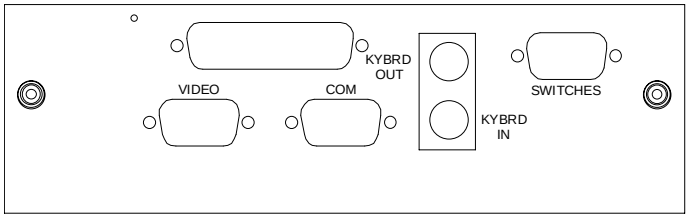
The next step in the installation of a Marathon Industrial Monitor is to mount the Monitor Video Electronics module to the back of the display module. The MSMON-00 Monitor Video Electronics module is used with 12.1", and 15" displays.

Align the Marathon Monitor Video Electronics Module with the opening in the back of the display module. Four mounting clamps are used to secure the video package to the display package. Turn the screws in the mounting clamps to secure.



Connecting the Marathon Video Electronics Module

1. Connect a VGA Cable from your computer to the Marathon Video Electronics Module Video port. The following drawing shows the connector panel on the Marathon Video Electronics Module.

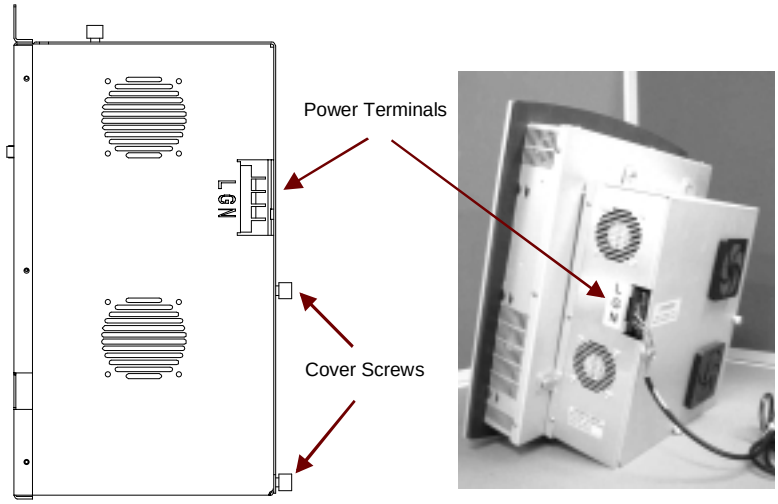


2. If you are using the touchscreen, connect the serial port from your computer to the COM port on the Marathon Video Electronics Module and load the touchscreen driver on your computer using the provided Touchscreen driver disk. Refer to “Dynapro SC3 Driver Installation.” You will need to calibrate the touchscreen after driver installation. For calibration refer to “Calibrating Dynapro SC3 Drivers.”

3. If you are using a Keypad or external keyboard you must connect the keyboard port from your computer to the KYBRD OUT port on the Marathon Video Electronics Module.

4. Connect your keyboard (if used) to either the front-access PS/2 port on the front of your marathon display or to the KYBRD IN port on the Marathon Video Electronics module. Both the front access port and the side access keyboard ports may ***not*** be used simultaneously.

5. Connect power. Power connections are made to a terminal strip located on the side of the unit. To access the terminal strip, remove the rear cover. The power supply is rated at 110 - 240VAC, 50 - 60Hz, 100W@50°C. Note the terminal markings for Line (L), Ground (G), and Neutral (N).



6. Because the Marathon Monitors have the ability to connect to a variety of VESA compliant computer devices, the unit must be configured prior to being used. The "Monitor Adjustments" section describes the configuration process.

Setting Video Resolution

You may need to optimize the video resolution of your computer to match the Marathon Monitor. When operating in a 640 x 480 mode on a display with higher resolution capability the image will not occupy the full screen. When operating in a resolution larger than the Marathon monitor you purchased; the image may not be legible. The On-Screen Display, outlined in the Monitor Adjustment section, will display the video signal's resolution in the bottom center of the display area. To optimize your image you will need to set the screen resolution using the following instructions:

1. From the Windows Task Bar select the "Settings" icon.
2. Select the Control Panel.
3. Select Display.
4. Select the Settings tab.

5. In the box labeled Desktop Area select the proper resolution for your Marathon Display using the table below:

Model #	Screen Resolution
MSDIS-1200/1210	800 x 600
MSDIS-1500/1510	1024 x 768

6. Click the Test button to verify that the changes you have selected are working properly.
7. After the 5 second test mode has completed, click OK, followed by the Apply button. Your display should now be set up properly.

Switch Box Installation

1. Locate the SWITCHES connector on the Marathon Monitor Video Electronics Module and connect the cable from the switch box to the port.
2. Press the **FCTN** key to display the On-Screen-Display (OSD) menu.

The switch box contains firmware that monitors switch activity and responds accordingly. The OSD menus provide visual confirmation of selections and adjustments by highlighting selections and modifying on-screen bar-graph levels.

The Video Electronics module is initialized during power-on to the last known saved conditions. All parameters are saved when you exit the menus, or by a sixty second time out.

Installing the Dynapro SC3 Driver

1. Insert Dynapro SC3 Driver disk into your computer's floppy drive.
2. Run A:\INSTALL.EXE.

   Driver and Path verification screen: These settings are not modifiable. They are for verifying the driver and version that is being installed. Click Next.

   Configuration Screen: For MSDIS, MSMON combination - change COM Port to that which the DB9 cable is attached to on the PC. Verify IRQ and I/O address are those that are defined in CMOS. Click Next.

   Install Parameter Summary Screen: Verify settings are correct.
3. Click Install.
4. After installation is complete, restart Windows for the changes to take effect by clicking “Yes” when prompted.
5. Remove floppy disk while system is rebooting.
6. Cursor may not respond correctly to touches after system has finished booting for the first time.
7. Run Driver Configuration as described in “Calibrating the Dynapro SC3 Driver.”

Calibrating the Dynapro SC3 Driver

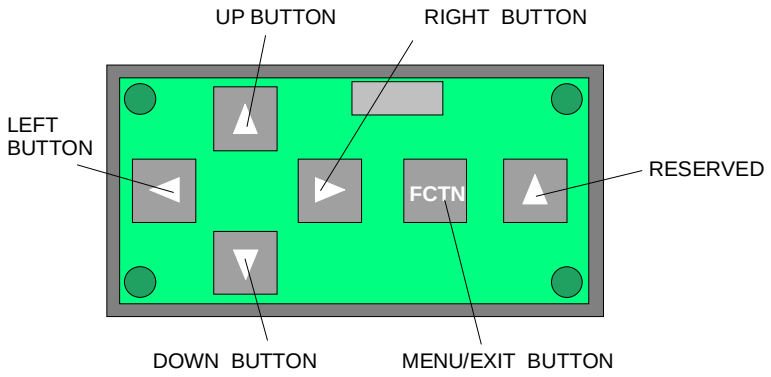
Note: The cursor may not respond to the touchscreen correctly after system has finished booting for the first time.

1. Run Start – Programs – Touch Screen Utilities – Configuration.
2. Click “Interface…”
3. Click “Advanced…”
4. Change “Screen Wires:” from 4 to 8 using the pulldown menu.
5. Click “OK” to exit Advanced Controller Option.
6. Click “OK” to exit Interface Configuration Options.
7. Choose “Calibration…” on Configuration Utilities Screen.
8. Choose “Calibrate”
9. Touch the three targets as they appear on the screen, the first in the upper left corner, the second in the lower right, and the third in the middle right.
10. Click “OK” to exit calibration screen.
11. Click “Exit” to close Configuration Utility.

Monitor Adjustments

An on-board micro-controller in the Marathon Video Electronics module provides main system control, system initialization, input mode auto-detection, and a user interface for monitor adjustments. An external switch box is connected to the user interface port (SWITCHES) and allows the user to make all monitor display adjustments.

The external switch box layout is shown in the drawing below.

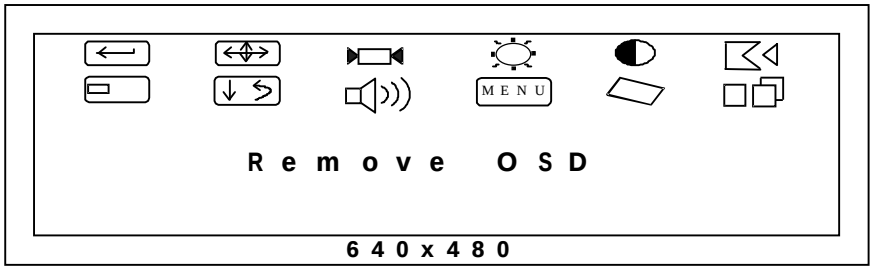


The switch box buttons provide the following selection functions:

FCTN	Activate Input Select Menu, exit all menus
LEFT ◀	Decrease selected parameter value
RIGHT ▶	Increase selected parameter value
UP ▲	Position Display image
DOWN ▼	Position Display image

Display Control Menus

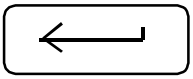
The On-Screen Display (OSD) menu appears when the **FCTN** key is pressed on the external switch box. The 'LEFT' ◀ and 'RIGHT' ▶ keys highlight the desired parameter and adjust the parameter value. The ▲ and ▼ keys are used to move between the upper and lower row of icons on the display. The displayed bar graph indicates the relative level for each parameter. To exit the Display Control menu, press the **FCTN** key.



Not making a selection or adjustment within sixty seconds of activating the Display Control menu will result in the system exiting from the menu.

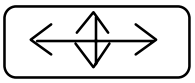
Remove On Screen Display

This menu selection allows the manual removal of the On Screen Display from the Panel. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to begin this command.



Video Position Adjustment

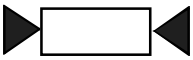
This menu selection allows the adjustment of the picture on the Panel. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to begin this command.



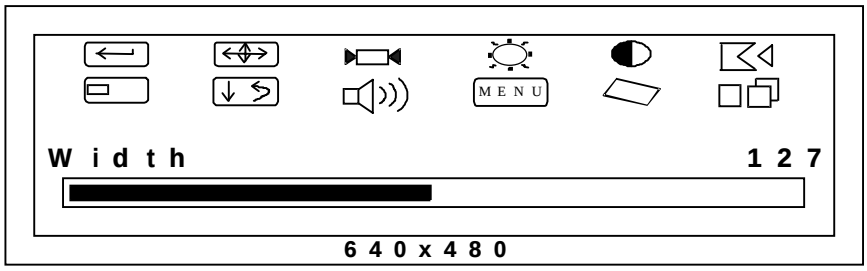
The ◄ or ► keys are used to center the image horizontally on the display by moving the input image capture window left or right. The ▲ and ▼ keys are used to center the image vertically on the display by moving the input image capture window up or down. The image window may be moved anywhere in the input frame except within the V-sync period.

Width

This menu selection allows the adjustment of the horizontal width of the picture on the Panel. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to begin this command.

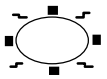


The ◄ or ► keys are used to adjust the display image to fill the panel horizontally. A scroll bar will appear on the display to indicate the relative setting.



Brightness

The Brightness control adjusts the brightness level of the input source. Press the ◄ or ► arrow keys on the keypad to select the icon, then press **FCTN** to begin this command.



The ◄ or ► keys are used to adjust the display image to the viewing preference of the user. A scroll bar will appear on the display to indicate the relative setting.

Contrast

The Contrast control adjusts the contrast ratio of the input source +/-3dB from the nominal 0.714V. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to begin this command.

The ◄ or ► keys are used to adjust the display image to the viewing preference of the user. A scroll bar will appear on the display to indicate the relative setting.

Phase

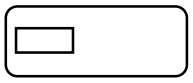
The ADC Clock Phase adjustment is available for PC Graphics inputs only. Phase adjust alters the sub-pixel sampling (fine pixel adjust). The phase of the ADC sample pixel clock may be adjusted from 0 to 360 degrees for PC Graphics inputs.

Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to begin this command.

The ◄ or ► keys are used to adjust the display for the clearest image. A poor adjustment is indicated by horizontal streaks on a 50% grey background. There may be several levels where no change is noticeable. Leave the adjustment in the center of this stable region. A scroll bar will appear on the display to indicate the relative setting.

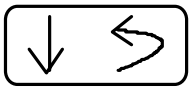
Zoom Enable

This function toggles the Zoom feature of the Marathon Video Display Module. With Zoom disabled, a video resolution lower than the maximum the panel supports, will fill only a portion of the whole screen. With Zoom enabled, the Marathon Video Electronics Module will stretch the lower video resolution image to fill the display screen. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to toggle this feature.



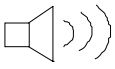
Restore Factory Settings

Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to select this feature. This will reset all Display Control menu parameters to their FACTORY DEFAULT settings.



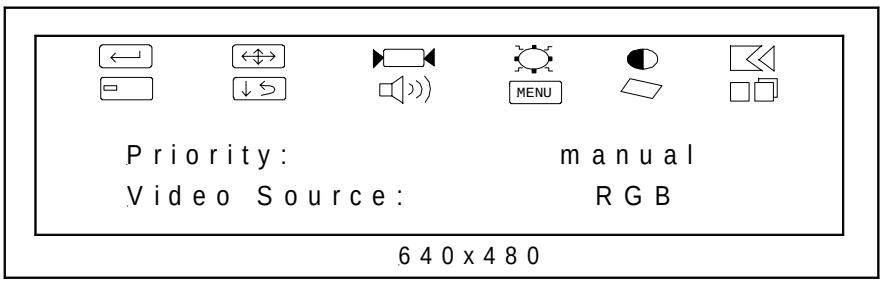
Video Source

Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to select this feature. The Input Select Menu will appear when the Marathon Video Electronics Module is properly connected and powered up.



The ◄ or ► keys select which input will be displayed if multiple inputs are connected. The selections are: RGB (PC Graphics), YUV (Composite Video), or manual. Select RGB" (PC Graphics) for proper operation of the Monitor Video Electronics Module. Not making a selection within sixty seconds of activating the menu will result in the system exiting from the menu. A

change in resolution of the selected input source will be detected within one second of obtaining valid source timing.



Menu Position Adjustment

Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to select this feature.

The ◄ or ► keys are used to move the OSD horizontally on the display. The ▲ and ▼ keys are used to move the image vertically on the display.

Menu Timeout

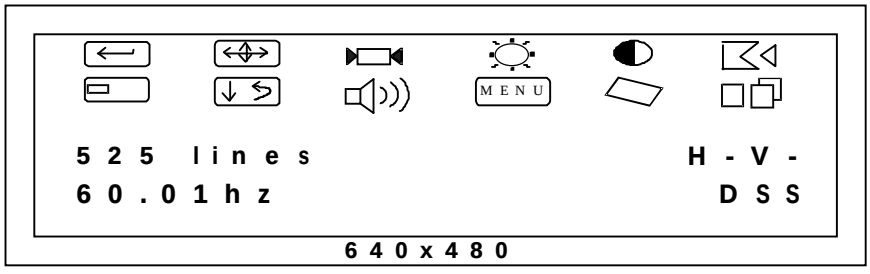
Menu Timeout allows adjustment of the length of time the menu will be displayed before it is automatically removed from the display. Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to select this feature.

The ◄ or ► keys are used to decrease or increase the length of time the OSD is displayed. A scroll bar will appear on the display to indicate the relative setting.

Status

The Status display includes the Resolution, Refresh Frequency and Number of Lines displayed.

Press the ◄ or ► keys on the keypad to select the icon, then press **FCTN** to select this display.



Chapter 3 Marathon Computers — Quick Install

A Marathon industrial computer consists of two components: a Marathon Display, and a Marathon Computer module. The installation process is simple. Make a cutout in the panel, clip the display in place, then attach the Marathon Computer module to the display package using the built-in quarter-turn clamps.

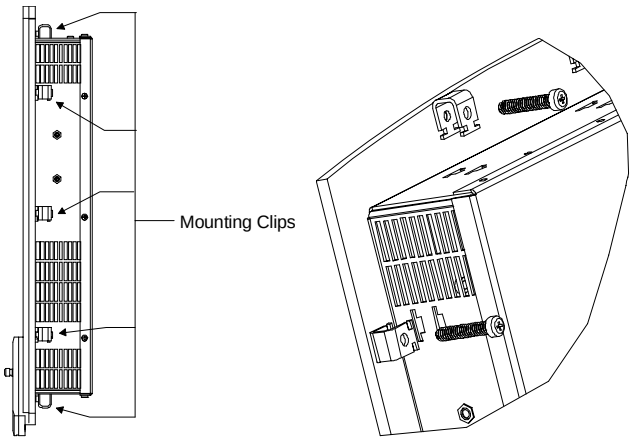
If you have questions during the installation process, contact our technical support group at 1-800-433-2682.

Installing Marathon Display Modules

Each Marathon Display is assigned a model number, based on the display size and whether it has the optional keypad.

MSDIS-1200	12.1" SVGA, Touchscreen
MSDIS-1210	12.1" SVGA, with Keypads and Touchscreen
MSDIS-1500	15.0" XGA, Touchscreen
MSDIS-1510	15.0" XGA, with Keypads and Touchscreen
MSDIS-1800	18.1" SXGA, Touchscreen

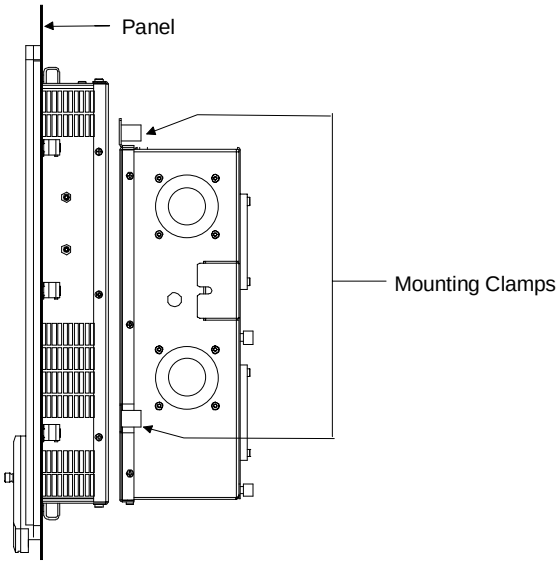
To determine the correct panel cutout, note the model number on your display and match the dimension drawing in chapter 7 of this manual with your display. Copy the panel cutout dimensions to your panel and mark the panel cutout hole. After cutting the hole, insert the display in the cutout and attach the mounting clips to the notches along the sides of the display housing. Tighten the clips and you are done with the display installation.

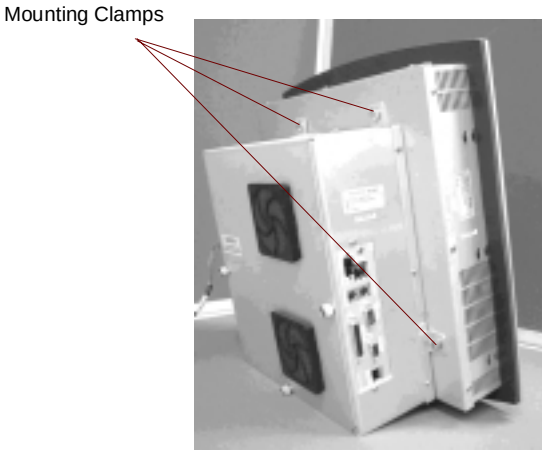


Installing Marathon Computer (CPU) Modules

Each Computer module is assigned a model number, based on various options. You can order the Standard (MSCPU) or Expanded back (MSCPX), different CPU/RAM/HD options, and different operating systems.

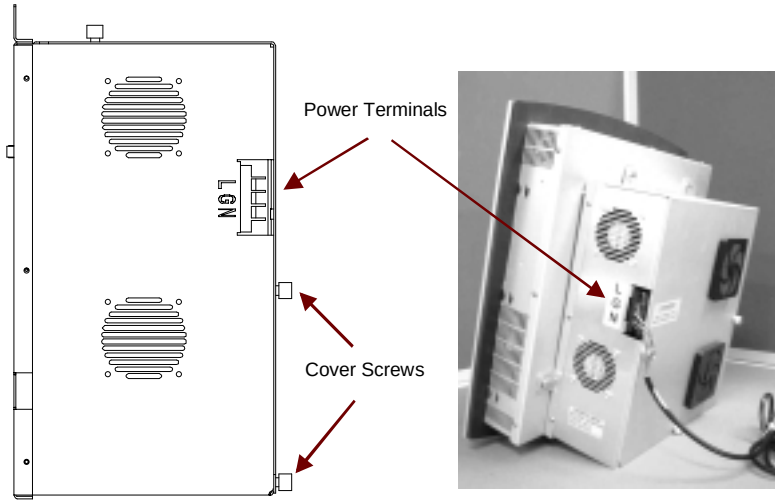
Align the Computer module with the opening in the back of the monitor display package. Four mounting clamps are used to secure the Computer module to the display package. Turn the screws in the mounting clamps to secure the Computer module.





Power Connections

Power connections are made to a terminal strip located on the side of the unit. To access the terminal strip, remove the rear cover. The power supply is rated at 110 - 240VAC, 50 - 60Hz, 100W @ 50°C. Note the terminal markings for Line (L), Ground (G), and Neutral (N).



Powering Up the Marathon Unit

Caution

Do not connect or disconnect external devices, such as a printer or a PS/2 mouse or keyboard, while the unit is powered. Failure to observe this precaution could result in damage to the equipment.

Note: During power up, the processor will run its normal diagnostic checks and indicate the presence of any errors either with a screen prompt or with warning beeps.

Setting Up Windows 98 Systems

Before you get started, you need a PS/2 keyboard. A PS/2 mouse is also recommended to help navigate through the setup screens.

1. Plug in the keyboard, PS/2 mouse (if available), and power cord.
2. Power on the unit. The Windows 98 Setup screen will appear.
3. Type your name.
4. Press the Tab key and type your company name
5. Press Enter.
6. Read the license agreement
7. Click your choice.
8. Click Next.
9. Enter the Windows 98 Certificate of Authenticity number found on the front of your Windows 98 manual. Press Enter.
10. The network card used in these systems supports Plug & Play installation.
11. Windows 98 will go through setup.
12. When prompted for Date/Time Properties, use your left and right arrow keys to set the time zone to your time zone. Press Enter.
13. If you have a printer connected, click Next and select your printer model type. If not, click the Cancel button. The Welcome to Windows 98 window will appear.
14. Click Close for the Welcome to Windows 98 window.

Setting Up Windows NT Systems

Before you get started, you need a PS/2 keyboard. A PS/2 mouse is recommended to help navigate through the setup screens.

1. Plug in the keyboard, PS/2 mouse (if available), and power cord.
2. Power on the unit.
3. Read license agreement
4. Tab to your choice and press Enter.
5. Press Enter to start the Windows NT Setup.
6. Type your name
7. Press the Tab key and type your company name.
8. Press Enter.

9. Enter your Windows NT Authentication number found on your Windows NT manual. You will need to use the Tab key to get to each number field. If correct, press Enter.
10. Enter a Computer name. This name should be unique to other computers on the same network. Press Enter. You will be prompted for a password.

    Note: Your system has been set up to enable autologon. Autologon allows the system to boot into Windows NT without your having to use a keyboard to press Ctrl-Alt-Del.

11. To use the autologon feature, type admin for the password. Press the Tab key and type admin in the Confirm Password box. Press Enter. (To skip the password, press Enter.)
12. To assign a password, type in a password, press the Tab key, and type the password in the Confirm Password box. Press Enter.
13. Press Enter to continue with Windows NT Setup.
14. Click "Finish."

Setting Screen Resolution

When the Marathon computer is shipped it is configured for 640 x 480 resolution to allow it to operate with any of the Marathon Displays. When using the 640 x 480 mode on a display with higher resolution capability the image will not occupy the full screen. To resolve this issue you will need to set the screen resolution using the following instructions:

1. From the Windows Task Bar select the “Settings” icon.
2. Select the “Control Panel”
3. Select “Display”
4. Select the “Settings” Tab
5. In the box labeled “Desktop area” select the proper resolution for your Marathon Display which using the table below:

Model #	Screen Resolution
MSDIS-1200/1201/1210/1211	800 x 600
MSDIS-1500/1510	1024 x 768
MSDIS-1800	1280 x 1024

6. Click the test button to verify that the changes you have selected are working properly.
7. After the 5 second test mode has completed, click “OK”, followed by the “Apply” button. Your display should now be set up properly.

Calibrating the Touchscreen

The first time you Power on the Marathon Computer you will need to calibrate the touchscreen using the steps listed below:

1. From the Windows taskbar select Programs.
2. Select Touch Screen Utilities.
3. Select Calibrate and follow the directions on your screen.

Configuring the Marathon Computer to Run on a Microsoft Network

Before setting up your new Marathon Computer for the network, you should consult with your network administrator. Duplicate TCP/IP addresses and duplicate computer names on the same network can cause network problems.

1. Click the Start icon, then click Settings and Control Panel.
2. In the Control Panel window, double click the Network icon. The Network dialog box will appear.
3. In the Network dialog box, click the Identification tab. You will need to type in your Computer name, Workgroup name, and Computer Description.
4. To allow sharing,
   A. Go to the Configuration tab and click the File and Print Sharing button. The File and Print Sharing dialog box will appear.
   B. Check the File and Print Sharing options that you want and click OK.
5. To add the TCP/IP protocol,
   A. Go to the Configuration tab and click the Add button. The Select Network Component dialog box will appear.
   B. Click the Protocol icon and click Add. The Select Network Protocol dialog box will appear.
   C. In the Manufacturer list, select Microsoft. In the Protocol list, select TCP/IP. Click OK.
   D. Change the Address from 10.0.0.1 to a unique address. Change the default subnet mask 255.0.0.0 to your subnet mask.
   E. Click OK twice.
6. When you have finished setting up the Network, click OK in the Network dialog box. Click Yes to reboot your system now.

Login Recommendation

If you type admin as your Administrator password, you will automatically log on as Administrator.

Chapter 4

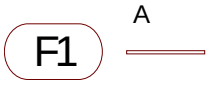
Keypad and Connector Information

Keypads

When you select the optional integrated membrane keypad for the 12" or 15" display, the display is surrounded with keypads that emulate PC style keyboard keys. Many of the keypads have multiple character sets along with their default functions.

The keypads for the 12" displays are configured differently from the keypads for the 15" display.

The keypads are divided into operational groups. The first group are the Function keys. The example below is the F1 key. Pressing the key produces the code equivalent to F1. Pressing the SHIFT key changes the character set to lower case alpha, so that when the F1 key is pressed, the lower case 'a' is produced. Pressing the SHIFT LOCK key changes the character set to upper case alpha, so that when the F1 key is pressed, the upper case 'A' is produced. See the Keypad Assignment tables, listed in “Marathon 12" Keypad Assignments” (page 4-2) and “Marathon 15" Keypad Assignments” (page 4-3) for all the key and corresponding code assignments.



Notes

- SHIFT LOCK — A toggle button. When pressed, it turns on the SHIFT LOCK LED, enables the upper case alpha character set, and turns off SHIFT if it was previously enabled. When it is pressed off, the SHIFT LOCK LED is turned off and the upper case alpha character set is disabled.
- SHIFT — A toggle button. When pressed, it turns on the SHIFT LED, enables the lower case alpha character set, and turns off SHIFT LOCK if it was previously enabled. When it is pressed off, the SHIFT LED is turned off and the lower case alpha character set is disabled.
- ALT — Emulates the standard PC ALT key to modify the currently active character set. This key must be held at the same time as the second key.
- CTRL — Emulates the standard PC CTRL key to modify the currently active character set. This key must be held at the same time as the second key.

Marathon 12" Display Keypad Assignments

Default [Field reconfigurable]	Upper Case Alpha Character Set	Lower Case Alpha Character Set
F1	A	A
F2	B	B
F3	C	C
F4	D	D
F5	E	E
F6	F	F
F7	G	G
F8	H	H
F9	I	I
F10	J	J
F11	K	K
F12	L	L
ALT-CTRL-F3 [F13]	M	M
ALT-CTRL-F4 [F14]	N	N
ALT-CTRL-F5 [F15]	O	O
ALT-CTRL-F6 [F16]	P	P
1	Q	Q
2	R	R
3	S	S
4	T	T
5	U	U
6	V	V
7	W	W
8	X	X
9	Y	Y
= (equal)	Z	Z
0	0	0
. (Period)	. (Period)	. (Period)
+ (Plus)	+ (Plus)	+ (Plus)
- (Dash)	- (Dash)	- (Dash)
* (Asterisk)	* (Asterisk)	* (Asterisk)
/ (Forward Slash)	/ (Forward Slash)	/ (Forward Slash)
BACKSLASH	BACKSLASH	BACKSLASH
HOME	HOME	HOME
CTRL (See “Notes,” p. 4-1)	CTRL (See “Notes,” p. 4-1)	CTRL (See “Notes,” p. 4-1)
PRINT	PRINT	PRINT
END	END	END
ALT (See “Notes,” p. 4-1)	ALT (See “Notes,” p. 4-1)	ALT (See “Notes,” p. 4-1)

Default [Field reconfigurable]	Upper Case Alpha Character Set	Lower Case Alpha Character Set
SHIFT (Toggle) (See "Notes," p. 4-1)	Shift Toggle	Shift Toggle
DECIMAL	DECIMAL	DECIMAL
SPACE	SPACE	SPACE
SHIFT LOCK (See "Notes," p. 4-1)	SHIFT LOCK	SHIFT LOCK
ESC	ESC	ESC
BKSPACE	BKSPACE	BKSPACE
DELETE	DELETE	DELETE
TAB	TAB	TAB
Pg Down	Pg Down	Pg Down
Pg Up	Pg Up	Pg Up
Up Arrow	Up Arrow	Up Arrow
Down Arrow	Down Arrow	Down Arrow
Left Arrow	Left Arrow	Left Arrow
Right Arrow	Right Arrow	Right Arrow
ENTER	ENTER	ENTER

Marathon 15" Display Keypad Assignments

Default [Field reconfigurable]	Upper Case Alpha Character Set	Lower Case Alpha Character Set
F1	A	A
F2	B	B
F3	C	C
F4	D	D
F5	E	E
F6	F	F
F7	G	G
F8	H	H
F9	I	I
F10	J	J
F11	K	K
F12	L	L
ALT-CTRL-F3 [F13]	M	M
ALT-CTRL-F4 [F14]	N	N
ALT-CTRL-F5 [F15]	O	O
ALT-CTRL-F6 [F16]	P	P
ALT-CTRL-F7 [F17]	Q	Q
ALT-CTRL-F8 [F18]	R	R
ALT-CTRL-F9 [F19]	S	S
ALT-CTRL-F10 [F20]	T	T

Default [Field reconfigurable]	Upper Case Alpha Character Set	Lower Case Alpha Character Set
1	U	U
2	V	V
3	W	W
4	X	X
5	Y	Y
6	Z	Z
7	7	7
8	8	8
9	9	9
0	0	0
=	=	=
. (Period)	. (Period)	. (Period)
+ (Plus)	+ (Plus)	+ (Plus)
- (Dash)	- (Dash)	- (Dash)
* (Asterisk)	* (Asterisk)	* (Asterisk)
/ (Forward Slash)	/ (Forward Slash)	/ (Forward Slash)
	36	
\ (Back Slash)	\ (Back Slash)	\ (Back Slash)
HOME	HOME	HOME
CTRL (See “Notes,” p. 4-1)	CTRL (See “Notes,” p. 4-1)	CTRL (See “Notes,” p. 4-1)
PRINT	PRINT	PRINT
END	END	END
ALT (See “Notes,” p. 4-1)	ALT (See “Notes,” p. 4-1)	ALT (See “Notes,” p. 4-1)
SHIFT (Toggle) (See “Notes,” p. 4-1)	SHIFT	SHIFT
PERIOD	PERIOD	PERIOD
SPACE	SPACE	SPACE
SHIFT LOCK (See “Notes,” p. 4-1)	SHIFT LOCK	SHIFT LOCK
ESC	ESC	ESC
BKSPACE	BKSPACE	BKSPACE
DELETE	DELETE	DELETE
TAB	TAB	TAB
Pg Down	Pg Down	Pg Down
Pg Up	Pg Up	Pg Up
Up Arrow	Up Arrow	Up Arrow
Down Arrow	Down Arrow	Down Arrow
Left Arrow	Left Arrow	Left Arrow
Right Arrow	Right Arrow	Right Arrow
ENTER	ENTER	ENTER
	20	

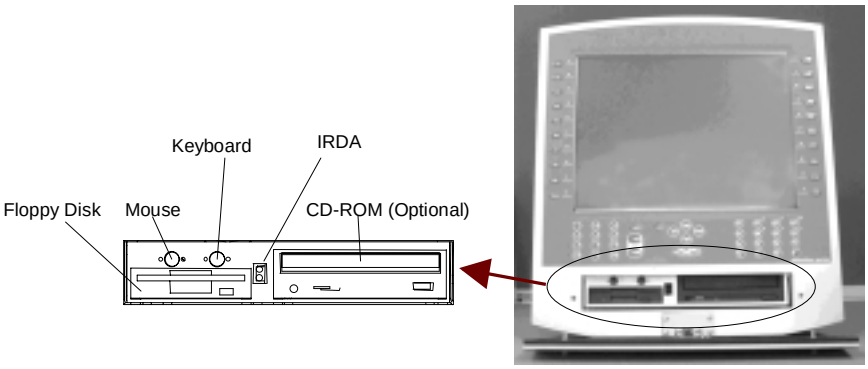
Connectors

Caution

External devices (printer, external disk drive etc.) should not be connected or disconnected from the industrial computer when the unit is powered up.

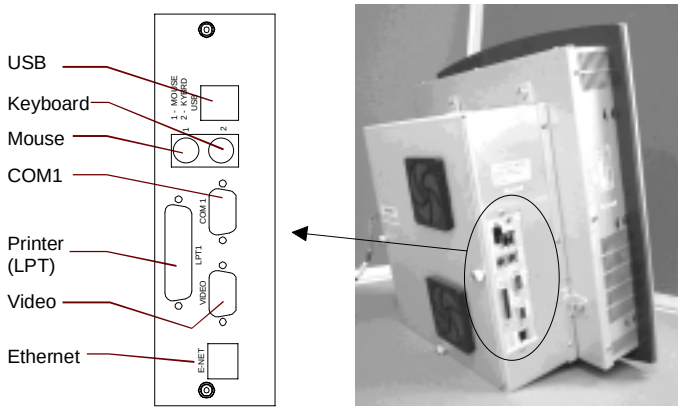
Front Access Panel

The front access panel provides easy access to peripherals. The peripherals which are front accessible depend on which Marathon product you have purchased. On the Marathon MSCPX expanded CPU products, you have access to a floppy disk drive, the mouse and keyboard ports, and a CD-ROM drive. On the MSCPU standard CPUs, you have access to a floppy disk drive and the mouse and keyboard ports. The Marathon MSMON products only allow access to the keyboard port. To open the access panel, loosen the two thumbscrews on the cover.



Communication Ports

All of the communication ports are accessible from the side of the unit. The Mouse and Keyboard ports are also located behind the front access panel.



Connector	Description
VGA Video Connector	VGA, DB-15 output. A VGA monitor can be connected to the Marathon Computer products if an external monitor is required during the development process. This option is not available on the Marathon Monitor products.
Serial Port Connector	The Marathon MSCPU and MSCPX products have one RS-232 serial port (COM 1) available on the side of the computer module. The second serial port is used for the touchscreen and is not available for the user.
Printer Port (LPT1)	Parallel, DB-25 Centronix compatible.
USB Ports	Two industry standard USB ports.
Keyboard Connector	Industry standard PS/2 keyboard connector.
PS/2 Mouse	Industry standard PS/2 mouse connector.
IrDA (Infrared Data Association) Port	The IrDA port interfaces with an optical module for wireless communication with other IrDA devices. The IrDA LEDs are accessible from the front access door on the MSDIS Marathon displays. The IrDA port is only available when the Marathon display module is connected to an MSCPU or MSCPX Marathon CPU. This option is not available when using an MSMON Monitor Video Electronics Module.
Ethernet Port (E-NET)	Industry standard RJ-45 port for 10/100baseT Ethernet.

Note: For pinouts, refer to "Connectors" in Chapter 6.

ISA and PCI Expansion on the Marathon MSCPX CPUs

Before applying power to your Marathon computer you will need to install any PCI or ISA cards required for your application. The Marathon MSCPX Expanded CPU backplane has two slots dedicated to ISA expansion cards and two slots that can be used for either ISA or PCI cards.

To install cards, remove the back cover from the MSCPX CPU module by removing the five thumb screws. Once you have removed the cover, remove the blank orbs for the slots in which you will install cards. After you have completed the installation of your boards simply reinstall the back cover.

Note: There are actually three PCI slots on the Marathon MSCPX CPU backplane. Only two PCI slots can be used unless the on-board Ethernet controller is disabled.

Note: The ISA and PCI cards installed in the Marathon MSCPX chassis can have a maximum card length of 9 inches.

Chapter 5 BIOS Setup Guide

The Marathon CPU modules are shipped with the BIOS already configured for proper operation. This chapter summarizes the complete BIOS functionality for customers who require a custom BIOS configuration.

Use the Phoenix BIOS Setup program for:

- Setting system time and date
- Installing new drives for hard disks and floppy disks
- Enhancing system performance by controlling advanced features such as shadow memory and cache memory
- Configuring system resources
- Setting security passwords

Caution

Incorrect settings can cause your system to malfunction.

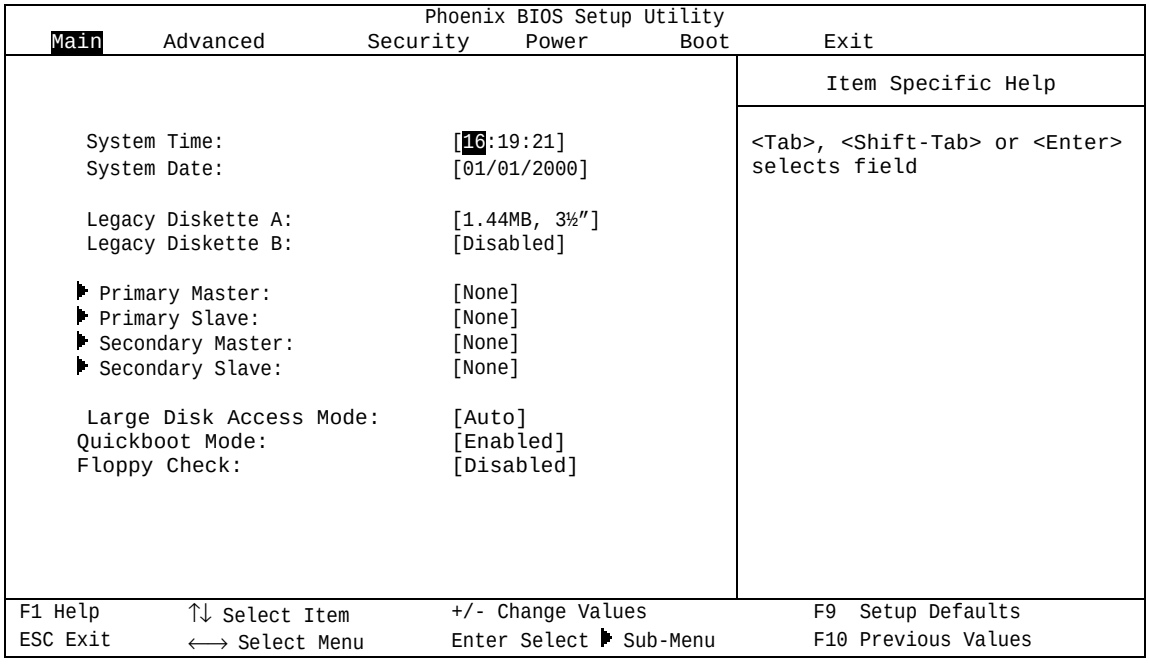
Starting the BIOS Setup Utility

To start the Phoenix BIOS Setup utility:

1. Turn on or reboot your system. Phoenix BIOS displays this message:

   Press <F2> to enter SETUP

2. Pressing <F2> displays the Main Menu, which looks like this:


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot Exit
Item Specific Help
System Time: [16:19:21]
System Date: [01/01/2000]
<Tab>, <Shift-Tab> or <Enter> selects field
Legacy Diskette A: [1.44MB, 3½"]
Legacy Diskette B: [Disabled]
Primary Master: [None]
Primary Slave: [None]
Secondary Master: [None]
Secondary Slave: [None]
Large Disk Access Mode: [Auto]
Quickboot Mode: [Enabled]
Floppy Check: [Disabled]
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Navigating the Setup Menus

The Menu Bar at the top of the window lists these selections:

Main	Use this menu for basic system configuration.
Advanced	Use this menu to set the Advanced Features of the system's chipset.
Security	Use this menu to configure User Access Management features.
Power	Use this menu to configure Power Management features.
Boot	Use this menu to select the boot device.
Exit	Exits the current menu.

Use the left/ right " ← → " arrow keys to make a selection.

Legend Bar

Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu. The following chart describes the legend keys and their alternates:

Key	Function
<F1> or <Alt- H>	General Help window.
<Esc>	Exit this menu.
← or → arrow keys	Select a different menu.
↑ or ↓ arrow keys	Move cursor up and down.
<Tab> or <Shift- Tab>	Cycle cursor through fields.
<Home> or <End>	Move cursor to top or bottom of window.
<PgUp> or <PgDn>	Move cursor to next or previous page.
<F5> or <->	Select the Previous Value for the field.
<F6> or <+> or <Space>	Select the Next Value for the field.
<F9>	Load the Default Configuration values for this menu.
<F10>	Saves current settings and Exits Setup.
<Enter>	Execute Command or Select Submenu.
<Alt- R>	Refresh screen.

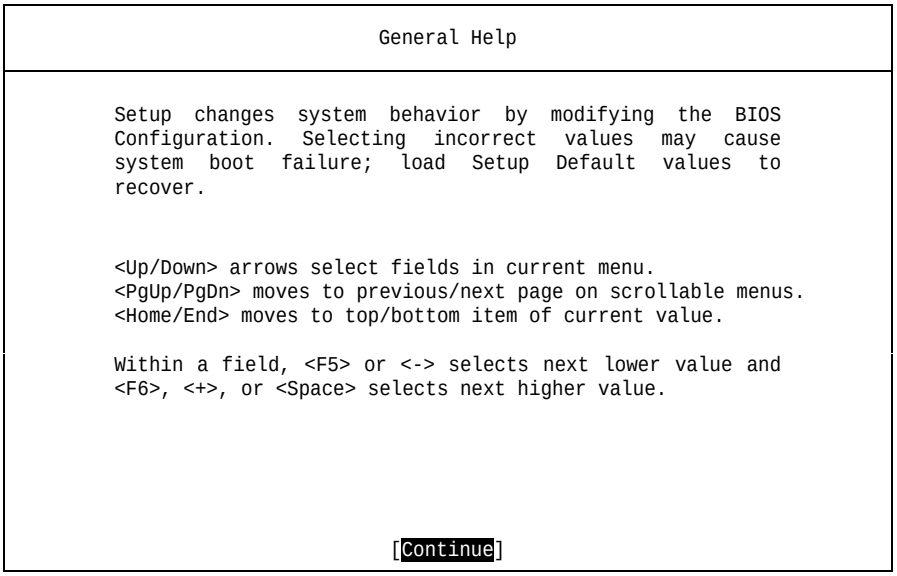
To select an item, use the arrow keys to highlight the field you want. Then use the plus and minus value keys to select a value for that field. The Save Changes commands in the Exit Menu save the values currently displayed in all the menus. To display a sub menu, use the arrow keys to highlight the sub menu you want, then press <Enter>. A pointer (▶) marks all sub menus.

Field Help Window

The help window on the right side of each menu displays the help text for the currently selected field. It updates as you move the cursor to each field.

General Help Window

Pressing <F1> or <Alt H> on any menu brings up the General Help window that describes the legend keys and their alternates:


General Help
Setup changes system behavior by modifying the BIOS Configuration. Selecting incorrect values may cause system boot failure; load Setup Default values to recover.
<Up/Down> arrows select fields in current menu.
<PgUp/PgDn> moves to previous/next page on scrollable menus.
<Home/End> moves to top/bottom item of current value.
Within a field, <F5> or <-> selects next lower value and <F6>, <+>, or <Space> selects next higher value.
[Continue]

The scroll bar on the right of any window indicates that there is more than one page of information in the window.

Use <PgUp> and <PgDn> to display all the pages.

Pressing <Home> and <End> displays the first and last page.

Press <Esc> to exit the current window.

Main Menu

You can make the following selections on the Main Menu itself. Use the sub menus for other selections.

Feature	Options	Description
System Time	HH: MM: SS	Set the system time.
System Date	MM/ DD/ YYYY	Set the system date.
Legacy Diskette A Legacy Diskette B	360 kB, 5 ¼" 1.2 MB, 5 ¼" 720 kB, 3 ½" 1.44MB, 3 ½" 2.88 MB, 3 ½" Disabled	Select the type of floppy disk drive installed in your system.
Large Disk Access Mode	DOS Other	If running other than DOS based system: UNIX, Novell Netware, Etc. select OTHER
Quickboot Mode	Enable Disable	Allows faster booting of the system.
Floppy Check	Enable Disable	Verification of Floppy type on boot.

The Master and Slave settings on the Main Menu control these types of devices:

- Hard disk drives
- CD-ROM drives

Phoenix BIOS supports up to two IDE disk adapters, called primary and secondary adapters. Each adapter supports one master drive and one optional slave drive in these possible combinations:

- One Master
- One Master, one Slave
- Two Masters
- Two Masters, one Slave
- Two Masters, two Slaves

There is one IDE connector for each adapter, Primary IDE and Secondary IDE. There can be two connectors on each ribbon cable attached to each IDE connector. When you enter Setup, the Main Menu displays the results of Autotyping–information each drive provides about its own size and other characteristics– and how they are arranged as Masters or Slaves on your machine.

Note: Do not attempt to change these settings unless you have an installed drive that does not autotype properly (such as an older hard disk drive that does not support autotyping).

If you need to change your drive settings, use the Master or Slave sub-menu as explained in "Advanced Hard Disk Features."

Advanced Hard Disk Features

Selecting one of the Master or Slave sub menus on the Main Menu displays this menu:

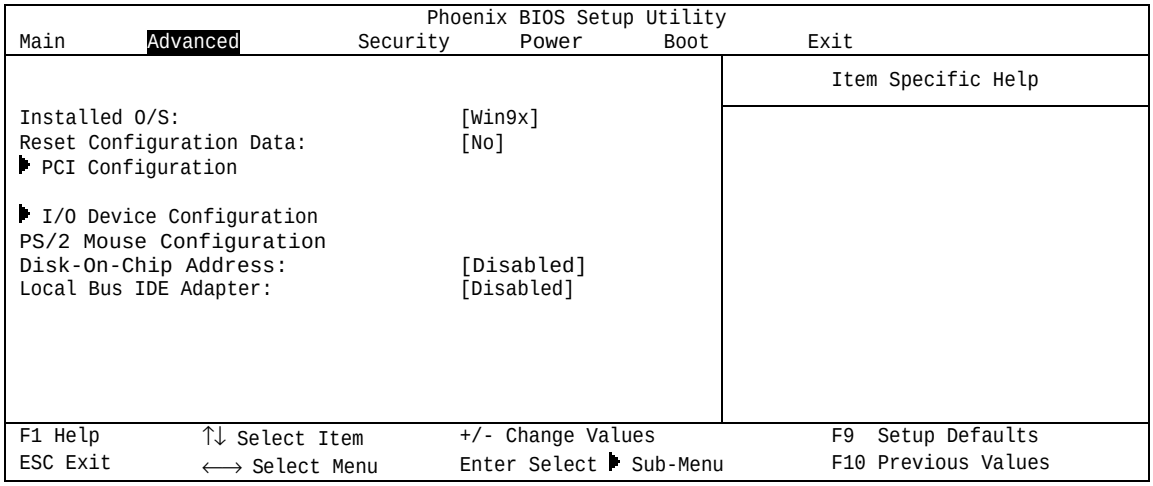
```
                              Phoenix BIOS Setup Utility
Main          Advanced        Security          Power       Boot       Exit

                Primary Master                                 Item Specific Help

Type:                         [User]                           Attempts to Automatically
                              CHS Format                       detect the drive type for
Cylinders:                    [65536]                          drives that comply with ANSI
Heads:                        [16]                             specifications.
Sectors:                      [63]
Maximum Capacity:             0MB
                              LBA Format
Total Sectors:                0
Maximum Capacity:             0MB

Multi-Sector Transfers:       [16 Sectors]
LBA Mode Control:             [Enabled]
32 Bit I/O:                   [Disabled]
Transfer Mode:                [Fast PIO 4]
Smart Monitoring:             [Disabled]

F1 Help      ↑↓ Select Item      +/- Change Values        F9 Setup Defaults
ESC Exit     ←→ Select Menu      Enter Select ▶ Sub-Menu  F10 Previous Values
```

Use the following chart to configure the hard disk drive with Advanced Hard Disk Features:

Feature	Options	Description
Type	None User Auto CD-ROM IDE Removable ATAPI Removable Other ATAPI	None = Autotyping is not able to supply the drive type or end user has selected None, disabling any drive that may be installed. User = You supply the hard disk drive information in the following fields. Auto = Autotyping, the drive Autotypes on each boot.
Cylinders	1 to 65,536	Number of cylinders.
Heads	1 to 16	Number of read/ write heads.
Sectors/ Track	1 to 63	Number of sectors per track.
Multi- Sector Transfers	Disabled 2 sectors 4 sectors 8 sectors 16 sectors	Any selection except Disabled determines the number of sectors transferred per block. Standard is 16 sectors per block.
LBA Mode Control	Enabled, Disabled	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads, & Sectors.
32-Bit I/O	Enabled, Disabled	Enables 32- bit communication between CPU and IDE card.
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4 FPIO 3 / DMA 1 FPIO 4 / DMA 2	Selects the method for transferring the data between the hard disk and system memory.
Smart Monitoring	Enable, Disable	Hard drive error monitoring and reporting, if supported by the installed drive.

Advanced Menu

Selecting "Advanced" from the menu bar displays a menu like this:


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot Exit
Item Specific Help
Installed O/S: [Win9x]
Reset Configuration Data: [No]
PCI Configuration
I/O Device Configuration
PS/2 Mouse Configuration
Disk-On-Chip Address: [Disabled]
Local Bus IDE Adapter: [Disabled]
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Use the following chart to make your selection:

Feature	Options	Description
Installed OS	Win9X Other	If your system has a Plug and Play Operating System, 'Win9x' lets the Operating System configure Plug and Play devices not required for boot. 'Other' makes the BIOS configure them.
Reset Configuration Data	Yes No	Yes erases all configuration data in ESCD, which stores the configuration settings for non- PnP plug- in devices. Select Yes when required to restore the Manufacturer's defaults.
PS/2 Mouse	Enabled Disabled Auto Detect	Set whether PS/2 Mouse is always, never or sometimes connected to this system.
Disk-On-Chip Address	Disabled CC00-CDFF D000-D1FF D400-D5FF D800-D9FF DC00-DDFF	If Disk-On-Chip is installed, select the address range it will use. If not installed select 'Disabled'.
Local Bus IDE adapter	Disabled Primary Secondary Both	Allows disable of one or both of the Hard Disk channels.

Integrated Peripherals

Selecting "PCI Configuration" from the Advanced menu displays this menu:

```
                                Phoenix BIOS Setup Utility
Main        Advanced        Security        Power        Boot        Exit

        PCI Configuration                          Item Specific Help

▶ PCI/PNP ISA IRQ Resource Exclusion
▶ PCI/PNP ISA UMB Region Exclusion                 Attempts to Automatically
                                                   detect the drive type for
                                                   drives that comply with ANSI
                                                   specifications.

F1 Help          ↑↓ Select Item      +/- Change Values        F9 Setup Defaults
ESC Exit         ←→ Select Menu      Enter Select ▶ Sub-Menu  F10 Previous Values
```

Selecting “PCI/PNP ISA Resource Exclusion” displays the following menu:

```
                                Phoenix BIOS Setup Utility
Main        Advanced        Security        Power        Boot        Exit

        PCI/PNP ISA Resource Exclusion             Item Specific Help

PCI IRQ line 1:                        [Auto Select]
PCI IRQ line 2:                        [Auto Select]
PCI IRQ line 3:                        [Auto Select]
PCI IRQ line 4:                        [Auto Select]
                                                   PCI devices can use hardware
IRQ 3:                                 [Available] interrupts called IRQs.  A PCI
IRQ 4:                                 [Available] device cannot use IRQs already
IRQ 5:                                 [Available] in use by ISA or EISA devices.
IRQ 7:                                 [Available] Use ‘Auto’ only if no ISA or
IRQ 9:                                 [Available] Eisa legacy cards are installed.
IRQ 10:                                [Available]
IRQ 11:                                [Available]

F1 Help          ↑↓ Select Item      +/- Change Values        F9  Setup Defaults
ESC Exit         ←→ Select Menu      Enter Select ▶ Sub-Menu  F10 Previous Values
```

Use the following chart in configuring the Resource Exclusions:

Feature	Options	Description
PCI IRQ line 1 PCI IRQ line 2 PCI IRQ line 3 PCI IRQ line 4	Disabled Auto Select 3, 4, 5, 7, 9, 10, 11, 12, 14, 15	PCI line resource allocation.
IRQ 3 IRQ 4 IRQ 5 IRQ 7 IRQ 9 IRQ 10 IRQ 11	Available Reserved	Reserve any IRQs in use by ISA or EISA devices.

Note: '*' indicates a resource conflict with another device already defined.

Caution

Incorrect settings can cause your system to malfunction.

Selecting "PCI/PNP ISA UMB Region Exclusion" displays the following menu:

```
                              Phoenix BIOS Setup Utility
Main      Advanced      Security            Power      Boot      Exit

PCI/PNP ISA Region Exclusion                    Item Specific Help

C800-CBFF:                          [Available]
CC00-CFFF:                          [Available]
DOOO-D3FF:                          [Available]
D400-D7FF:                          [Available]
D800-DBFF:                          [Available]
DCOO-DFFF:                          [Available]

                                                Reserves the specified block of
                                                upper memory for use by legacy
                                                ISA devices.

F1 Help      ↑↓ Select Item     +/- Change Values        F9  Setup Defaults
ESC Exit     ←→ Select Menu     Enter Select ▶ Sub-Menu  F10 Previous Values
```

Use the following chart in configuring the Resource Exclusions:

Feature	Options	Description
C800-CBFF CC00-CFFF D000-D3FF D400-D7FF D800-DBFF DC00-DFFF	Available Reserved	Reserve any Upper Memory Blocks in use by ISA or EISA devices.

Caution

Incorrect settings can cause your system to malfunction.

Selecting "I/O Device Configuration" displays the following menu:

```
                              Phoenix BIOS Setup Utility
Main      Advanced      Security            Power       Boot      Exit

I/O Device Configuration                          Item Specific Help

Legacy USB Support:                    [Enable]
Onboard Ethernet:                      [Enable]
Onboard Audio:                         [Enable]
Serial Port A:                         [OS Controlled]
Serial Port B:                         [OS Controlled]
  Mode:                                [Normal]
Serial Port C:                         [OS Controlled]
Serial Port D:                         [OS Controlled]
Parallel Port A:                       [OS Controlled]
  Mode:                                [Normal]
Parallel Port B:                       [Disabled]
Floppy Disk Controller:                [Enabled]
  Base I/O Address:                    [Primary]
  Floppy Drive Swap:                   [Disabled]

F1 Help      ↑↓ Select Item     +/- Change Values      F9  Setup Defaults
ESC Exit     ←→ Select Menu     Enter Select ▶ Sub-Menu F10 Previous Values
```

Use the following chart in configuring the I/O Devices:

Feature	Options	Description
Legacy USB Support	Enabled Disabled	Controls Universal Serial Bus option support
Onboard Ethernet	Enabled Disabled	Allows disabling of the on-board Ethernet chip
Onboard Audio	Enabled Disabled	Allows disabling of the on-board Sound chip
Serial Port A Serial Port B Serial Port C Serial Port D	OS Controlled Disabled Enabled Auto	Operating System configures the port Not configured User configured BIOS or OS chooses configuration
Mode	Normal IrDA ASK-IR	Serial port settings to enable InfraRed devices
Base I/O Address	2E8 2F8 3E8 3F8	When Serial ports are Enabled for user configuration, this selection is available to set Port I/O Address.
Interrupt	IRQ 3 IRQ 4 IRQ 9 IRQ 11	When Serial ports are Enabled for user configuration, this selection is available to set Port IRQ. Port A and B only have IRQ 3 and 4 available.
Parallel Port A Parallel Port B	OS Controlled Disabled Enabled Auto	Operating System configures the port Not configured User configured BIOS or OS chooses configuration

Feature	Options	Description
Mode	ECP EPP Output Only Bi-Directional	Selects Parallel port output mode.
Base I/O Address	278 3BC 378	When Parallel port B is enabled, this selection is available to set Port I/O Address.
Interrupt	IRQ 5 IRQ 7	When Parallel port B is enabled, this selection is available to set Port IRQ.
DMA Channel	DMA 0 DMA 1 DMA 2 DMA 3	When Parallel port B is enabled, this selection is available to set Port DMA Channel.
Floppy Disk Controller	Enabled Disabled	Enable if Floppy Drive is installed.
Base I/O Address	Primary Secondary	Location in memory where Floppy controller is found.
Floppy Drive Swap	Enabled Disabled	Swaps the identification of Drive A and B.

Caution

Incorrect settings can cause your system to malfunction.

Security Control

Selecting "Security" from the Main menu displays this menu:

```
                              Phoenix BIOS Setup Utility
Main      Advanced      Security          Power       Boot       Exit

                                                      Item Specific Help

Supervisor Password Is:                 Clear
User Password Is:                       Clear         Controls access rights to setup
                                                      and use of this system.
Set Supervisor Password:                [Enter]
Set User Password:                      [Enter]

Password on Boot:                       [Disabled]
Fixed disk boot sector:                 [Normal]
Diskette access:                        [Supervisor]

F1 Help      ↑↓ Select Item     +/- Change Values        F9  Setup Defaults
ESC Exit     ←→ Select Menu     Enter Select ▶ Sub-Menu  F10 Previous Values
```

Use the following chart in configuring the I/O Devices:

Feature	Options	Description
Supervisor Password Is:	Clear Password	Controls access to the setup utility.
User Password Is:	Clear Password	Controls access to the system.
Set Supervisor Password:	Enter	Used to set or change the Password.
Set User Password:	Enter	Used to set or change the Password.
Password on Boot:	Enabled Disabled	Enables security options at boot up.
Fixed disk boot sector:	Normal Write Protect	Write protects the boot sector to protect from Virus'.
Diskette access:	User Supervisor	Who has access to Floppy Drive.

Caution

Incorrect settings can cause your system to malfunction.

Requesting the setting of a Password will result in the display of this screen:

```
Set Supervisor Password

Enter New Password              [          ]

Confirm New Password            [          ]
```

Power Menu

Selecting "Power Savings" from menu bar displays a menu like this:

```
                              Phoenix BIOS Setup Utility
Main      Advanced      Security          Power          Boot      Exit

                                                    Item Specific Help

Power Saving:                       [Off]

                                                    Select Power Management Mode.
Standby Timeout:                    [Off]           Choosing modes changes system power
  Auto Suspend Timeout:             [Off]           management settings. Maximum Power
                                                    Savings conserves the greatest
Hard Disk Timeout:                  [Disabled]      amount of system power while
                                                    Maximum Performance conserves power
Resume On Time:                     [Off]           but allows greatest system
Resume Time:                        [00:00:00]      performance. To alter these
                                                    settings, choose Customize. To turn
                                                    off power management, choose OFF.

F1 Help   ↑↓ Select Item        +/- Change Values          F9  Setup Defaults
ESC Exit  ←→ Select Menu       Enter Select ▶ Sub-Menu    F10 Previous Values
```

The following chart describes each of the options on this menu:

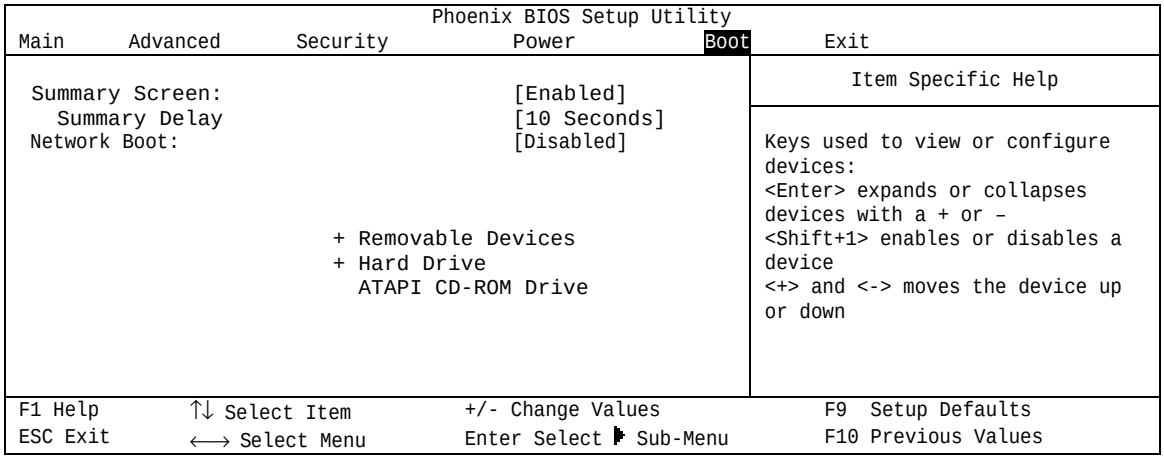
Feature	Options	Description
Power Savings	Disabled Maximum Performance Maximum Power Savings Customized	Select Power Management Mode. Choosing modes changes system power management settings. Maximum Power Savings conserves the greatest amount of system power while Maximum Performance conserves power but allows greatest system performance. To alter these settings, choose Customize. To turn off power management, choose OFF.
Standby Timeout	Off 1 Minute 2 Minutes 4 Minutes 6 Minutes 8 Minutes 12 Minutes 16 Minutes	Amount of time the system needs to be in Idle Mode before entering the Standby Mode. Standby Mode turns off various devices in the system, including the screen, until you start using the computer again.
Auto Suspend Timeout	Off 5 Minutes 10 Minutes 15 Minutes 20 Minutes 30 Minutes 40 Minutes 60 Minutes	Amount of time the system needs to be in Standby before entering Suspend Mode.
Hard Disk Drive Timeout	Off 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 2 Minutes 4 Minutes 6 Minutes 8 Minutes 10 Minutes 15 Minutes	Amount of time the hard disk needs to be inactive before it is turned off.
Resume On Time	On Off	Enables timed wake up of the system.
Resume Time	00:00:00	Set specific time the system is to wake up.

Boot Menu

After you turn on your computer, it will attempt to load the operating system (such as Windows NT) from the drive of your choice. If it cannot find the operating system on that drive, it will attempt to load it from one or more other drives in the order specified in the Boot Menu.

Note: Specifying any drive as a boot drive on the Boot Menu requires the installation of an operating system on that drive. To use another drive as a bootable drive may require your installing the operating system on it.

Selecting "Boot" from the Menu Bar displays the Boot menu.


Phoenix BIOS Setup Utility
Main Advanced Security Power Boot Exit
Summary Screen: [Enabled]
Summary Delay [10 Seconds]
Network Boot: [Disabled]
+ Removable Devices
+ Hard Drive
ATAPI CD-ROM Drive
Item Specific Help
Keys used to view or configure devices:
<Enter> expands or collapses devices with a + or –
<Shift+1> enables or disables a device
<+> and <-> moves the device up or down
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

You can arrange the boot order list at the bottom of this menu to specify the order of the devices from which the BIOS will attempt to boot the Operating System.

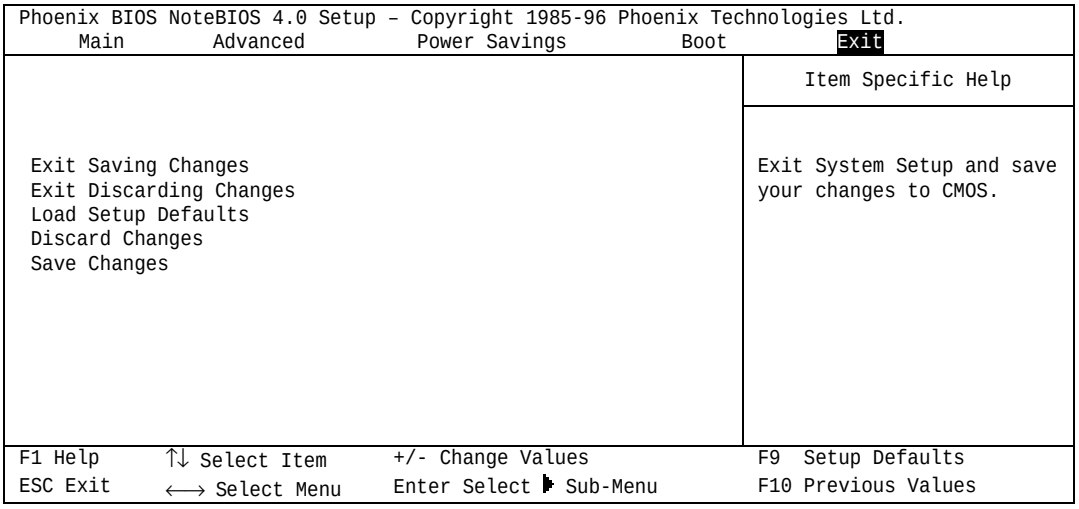
To move a device, first select it with the up- or- down arrows, and move it up or down using the <+> and <-> keys.

Use the following chart in configuring the Boot parameters:

Feature	Options	Description
Summary Screen	Enabled Disabled	Controls display of the setup information screen upon bootup.
Summary Delay	0 – 30 seconds	Controls length of time setup information screen is displayed.
Network Boot:	Enabled Disabled	Controls whether system can boot from a network drive.

Exit Menu

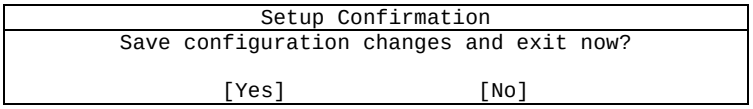
Selecting "Exit" from the menu bar displays this menu:


Phoenix BIOS NoteBIOS 4.0 Setup – Copyright 1985-96 Phoenix Technologies Ltd.
Main Advanced Power Savings Boot Exit
Item Specific Help
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Exit System Setup and save your changes to CMOS.
F1 Help ↑↓ Select Item +/- Change Values F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

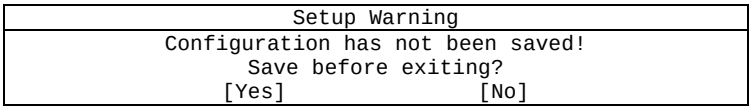
Exit Saving Changes

After making your selections on the Setup menus, always select "Exit Saving Changes" to store the selections in battery-backed CMOS RAM. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS.

After you save your selections, the program displays this message:



If you attempt to exit without saving, the program asks if you want to save before exiting and displays this message:



During bootup, Phoenix BIOS attempts to load the values saved in CMOS. If those values cause the system boot to fail, reboot and press <F2> to enter Setup. In Setup, you can get the Default Values (as described below) or try to change the selections that caused the boot to fail.

Exit Discarding Changes

Use this option to exit Setup without storing in CMOS any new selections you may have made. The selections previously in effect remain in effect. Pressing <Enter> will exit Setup and reboot the computer.

The program asks if you want to save before exiting and displays this message:

Setup Warning
Configuration has not been saved! Save before exiting? [Yes] [No]

Load Setup Defaults

To display the default values for all the Setup menus, select "Load Setup Defaults" from the Exit Menu. The program displays this message:

Setup Confirmation
Load default configuration now? [Yes] [No]

If, during bootup, the BIOS program detects a problem in the integrity of values stored in CMOS, the program displays this message:

```
System CMOS checksum bad - run SETUP
Press <F1> to resume, <F2> to Setup
```

The CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Press <F1> to resume the boot or <F2> to run Setup with the ROM default values already loaded into the menus. You can make other changes before saving the values to CMOS.

Discard Changes

To display the previous values for all the Setup menus, select "Discard Changes" from the Exit Menu. The program displays this message:

Setup Confirmation
Load previous configuration now? [Yes] [No]

Save Changes

Selecting “Save Changes” saves all the selections without exiting Setup. You can return to the other menus if you want to review and change your selections.

The program displays this message:

Setup Confirmation
Save configuration changes now? [Yes] [No]

Chapter 6

Technical Specifications

CPU

	SBC-Max-2	SBC-PII
Processor	233 MHz Pentium MMX or 333 MHz AMD-K6-2	Celeron, PIII
DRAM	64MB standard, 128MB optional	PC100 128 or 256MB
BIOS	Phoenix	Phoenix
L2 cache	512K	128K or 512K
COM ports	Two, RS-232 (one used for touchscreen)	Two, RS-232 (one used for touchscreen)
IrDA	Full duplex IrDA	Full duplex IrDA
Ethernet	10/100 Base T (RJ-45), full duplex	10/100 Base T (RJ-45), full duplex
PARALLEL port	DB-25, Centronix compatible	DB-25
KEYBOARD port	PS/2, front or side access	PS/2, front or side access
MOUSE port	PS/2, front or side access	PS/2, front or side access
VGA port	DB-15 output, 2MB video memory	DB-15 output, 4MB AGP video memory
Hard drive	2.5", 4GB, 6GB, or larger	2.5", 4GB, 6G, or larger
Pre-loaded operating systems	Windows 98, Windows NT 4.0	Windows 98, Windows NT 4.0
Pre-loaded touchscreen drivers	Windows 95/98, Windows NT 4.0	Windows 95/98, Windows NT 4.0
Floppy Drive	1.44MB, front accessible	1.44MB, front accessible
CD-ROM drive	Front accessible (MSCPX CPUs only)	Front accessible (MSCPX CPUs only), optional R/W CD-ROM drive
Power supply	110 - 240VAC, 50 - 60Hz, 100W @ 50°C	110 - 240VAC, 50 - 60Hz, 100W @ 50°C

Displays

The Marathon Video Electronics module is designed to be fully compatible with VESA compliant Video signals.

Size	12.1”	15.0”	18.1”
Display type	TFT	TFT	TFT
Resolution	SVGA (800 x 600)	XGA (1024 x 768)	SXGA (1280 x 1024)
Native colors	262,144	262,144	16.7 million

Touchscreens

Displays	All sizes
Type	Analog Resistive
Resolution	4096 X 4096, >100,000 touch-points/sq. inch
Transmissivity	75%
MTBF	35 million touches/spot
Response time	100ms
Stylus	All types
O/S driver availability	Windows 95/98, Windows NT

System DRAM

The Marathon Computer Modules support one 168-pin EDO DIMM DRAM module for a maximum of 128 Mbytes of system memory. The 168-pin EDO DIMM DRAM module must be 3.3V and unbuffered 100MHz bus. PIII systems support PC100 compatible memory. For more information on compatible memory modules, contact your Support Representative.

Total System Memory	DIMM module
64MB	8M x 64 or 8M x 72
128MB	16M x 64 or 16M x 72
256MB (SBC-PII systems)	32M x 64 pr 32M x 72

System DRAM Installation (U3)

The SBC-PII supports double sided 168-pin DIMM SDRAM modules providing 8 to 256 Mbytes (with non-registered DIMMs) of system memory. SBC-PII supports 64 bit (Non-ECC) or 72 bit (ECC) SDRAMs. Enhanced SDRAM Open Page Architecture Support for 16- and 64-Mbit DRAM devices with 2k, 4k and 8k page sizes.

Memory Sizing

Incremental Memory	DIMM module
8MB	1M x 64 or 1M x 72
16MB	2M x 64 or 2M x 72
32MB	4M x 64 or 4M x 72
64MB	8M x 64 or 8M x 72
128MB	16M x 64 or 16M x 72

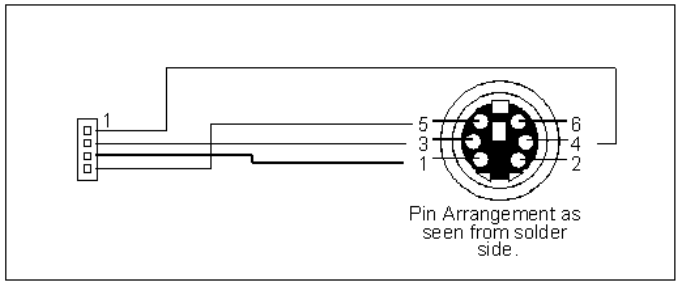
Connectors

This section provides pinouts for SBC-Max-2 and SBC-PII (page 6-6) single board computers.

SBC-Max-2 Single Board Computer Connectors

PS/2 Mouse

A PS/2 mouse can be connected to the Marathon industrial computer as shown in the following figure.



Pin	Function
1	+5 Volts
2	Ground
3	Data
4	Clock

Keyboard Connector

The DIN connector on the Marathon CPUs are compatible with PS/2 keyboards.

Pin	Signal
1	Keyboard Clock
2	Keyboard Data
3	/Keyboard Reset
4	Ground
5	+5 Volts

USB Ports

The Marathon Computer Modules provide an interface for two USB ports.

Pin	Function
1	+5V fused
3	Port 1-
5	Port 1+
7	Ground
9	Shield

Pin	Function
2	+5V fused
4	Port 2-
6	Port 2+
8	Ground
10	Shield

Serial Port Connector

The Marathon MSCPU and MSCPX products have one RS-232 serial port (COM 1) available on the side of the computer module. The second serial port is used for the touchscreen and is not available to the user.

Pin	Signal
1	RLSD
2	RX DATA
3	TX DATA
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Printer Port (LPT1)

Pin	Signal	Pin	Signal
1	/STB	14	/AFD
2	Data 0	15	Error
3	Data 1	16	/Init
4	Data 2	17	/Slin
5	Data 3	18	Gnd
6	Data 4	19	Gnd
7	Data 5	20	Gnd
8	Data 6	21	Gnd
9	Data 7	22	Gnd
10	/ACK	23	Gnd
11	Busy	24	Gnd
12	PE	25	Gnd
13	SLCT		

VGA Video Connector

A VGA monitor can be connected to the Marathon Computer products if an external monitor is required during the development process. This option is not available on the Marathon Monitor products.

Pin	Function
1	Red
2	Green
3	Blue
4	
5	Gnd

Pin	Function
6	Gnd
7	Gnd
8	Gnd
9	
10	Gnd

Pin	Function
11	
12	DDC Data
13	Hsync
14	Vsync
15	DDC Clk

Ethernet Port (E-NET)

The Marathon CPU Modules have an industry standard RJ-45 port for 10/100baseT Ethernet. The table below lists the RJ-45 connector pinout:

Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	Not Connected
5	Not Connected
6	Receive -
7	Not Connected
8	Not Connected

SBC-PII Single Board Computer Connectors

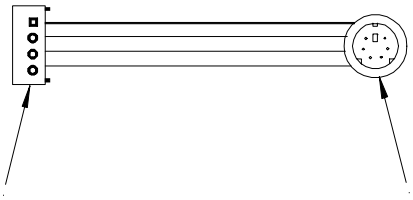
External Battery (J14)

If the internal battery is not installed, the SBC-PII board has the external battery option connector. An internal or external 3 Volt battery will need to be installed to maintain the CMOS settings whenever the power is off. The connector is a 3 x 1 straight locking 0.1" center header.

Pin	Signal
1	+3 Volts
2	Gnd
3	N/C

PS/2 Mouse Connector (J17)

The PS/2 mouse connector, J17 on the SBC-PII, is a 4 x 1 straight locking 0.1” center header. The use of an adapter cable available from Computer Dynamics, provides a direct interface to PS/2 mice. The Mouse circuit is compatible with industry standard PS/2 mice.



Pin	Signal	Pin
1	+5 Volts	4
2	Gnd	3
3	Data	1
4	Clock	5
	N/C	2,6

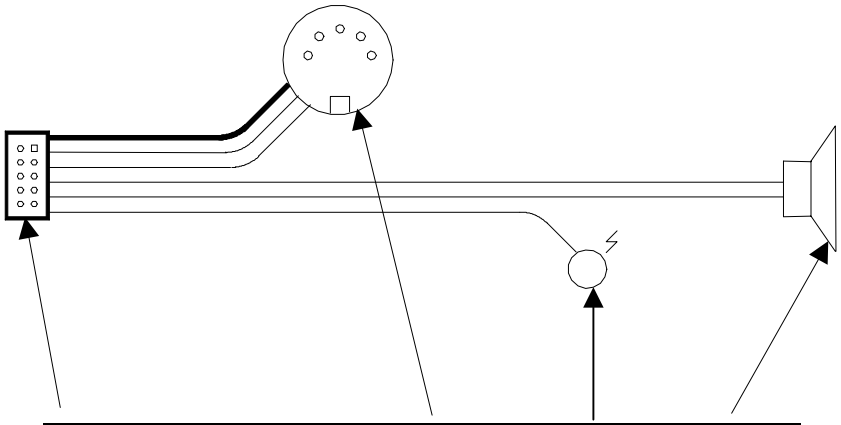
Keyboard Interface (J27)

The keyboard connector, J27 on the SBC-PII, is a 5 x 2 straight 0.1” center header. The connector provides an interface to PC/AT-compatible keyboards. It is 8042 compatible with 2KB programmable ROM and 256-byte data RAM.

A transistor is provided to drive a speaker or annunciator. Attach an 8-Ω speaker (2" to 2.5" are typically used) to the keyboard cable as shown. Annunciators may be connected in place of the speaker. It will need to be connected to either the 5V supply or the 12V supply depending on the requirements of the particular device.

An IDE activity indicator LED may be connected to this cable as well.

Pinouts for Keyboard Interface

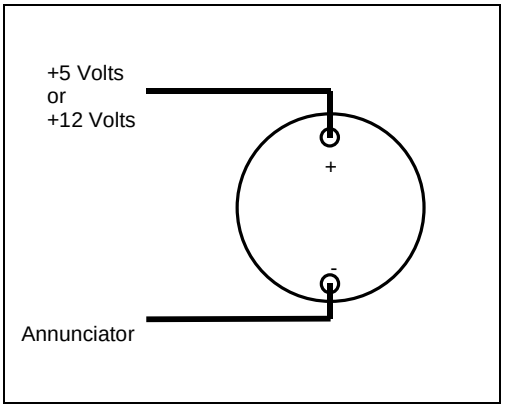


SBC Pin	Function	Keybd Pin	LED Pin	Spkr Pin
1	KB Clock	1		
2	Gnd	4		
3	KB Data	2		
4	+5 VDC	5		
5	KB Reset	3		
6	HDD LED		Cathode	
7	+12 VDU			Alt.Pos
8	Annunciator			Neg
9	+5 VDC		Anode	Pos
10	Speaker			Neg

Caution

Inserting the keyboard/speaker cable in the serial port connector or a serial port cable in the keyboard/speaker connector may damage either your keyboard or your SBC.

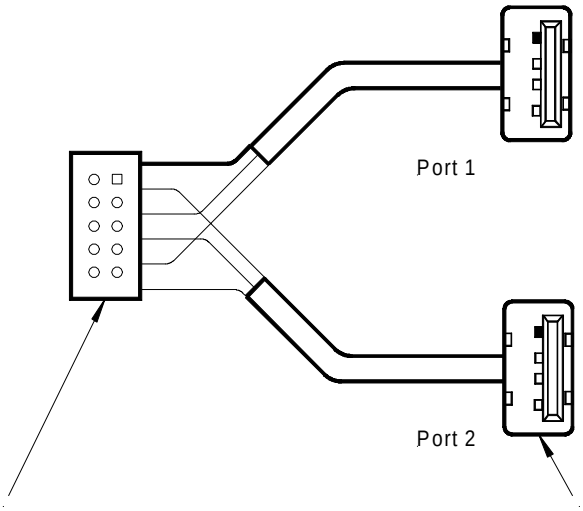
Typical Annunciator Connection to Keyboard Interface



USB Ports (J21)

The SBC-PII provides an interface for two USB 1.0 Ports for Serial Transfers at 1.5 or 12 Mbit/sec. Supports Legacy Keyboard and Mouse Software with USB-Based Keyboard and Mouse connections. Complies with UHCI Design Guide, Revision 1.1 interface.

The connector is a 5 x 2 straight 0.1" center header. Dual rear bracket connector compatible with the USB Host Cable is available from Computer Dynamics. Port 2 pinout is detailed, Port 1 is the same.

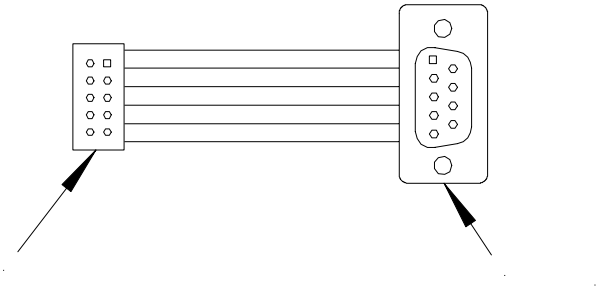


Function	Pin	Pin	Function	Pin	Function
+5V fused	1	2	+5V fused	1	+5V fused
Port 1 -	3	4	Port 2 -	2	Port 2 -
Port 1 +	5	6	Port 2 +	3	Port 2 +
Gnd	7	8	Gnd	4	Gnd
Gnd	9	10	Gnd	Shell	Shield

Serial Port Interface (J18, J19, J24 and J25)

The SBC-PII has four serial ports that are flat-cable-compatible with the standard PC 9-pin serial connector, as shown in the following figure. COM A (J24) and COM B (J18) are RS-232 only, COM C (J25) and COM D (J19) can be configured as RS-232, RS-422 or RS-485.

They support 16C550 compatible enhanced serial ports. The connector is a 5 x 2 straight 0.1" center header. The 9-pin D-shell connector is typically a male connector indicating RS-232 DTE.



Pin	Signal	Direction
1	DCD	In
2	DSR	In
3	Rx Data	In
4	RTS	Out
5	Tx Data	Out
6	CTS	In
7	DTR	Out
8	RI	In
9	GND	--
10	KEY	Not connected

Pin	Signal
1	DCD
2	Rx Data
3	Tx Data
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Caution

Inserting the serial cable in the keyboard connector or a keyboard cable in the serial port connector may damage either your keyboard or your SBC.

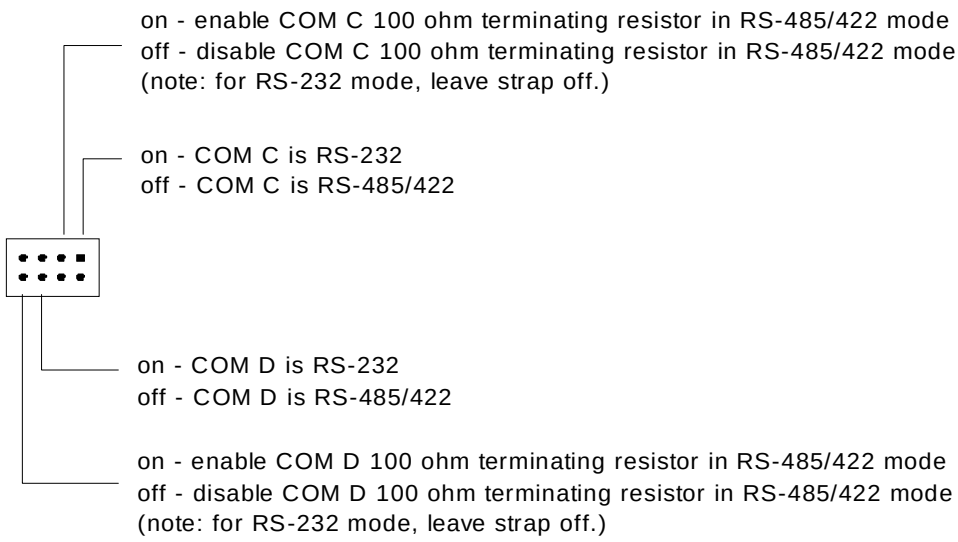
COM C and COM D can be configured as RS-422/RS-485. The pin definitions for COM C and COM D change as shown in the following table. Connections are based on signals at the DB-9 end of cable.

Pin Definitions for COM C and COM D Configured as RS-422/RS-485

Pin	RS-232	RS-422/RS-485 COM C and COM D only
1	DCD	
2	Rx Data	RD -
3	Tx Data	TD -
4	DTR	
5	Gnd	
6	DSR	
7	RTS	TD +
8	CTS	RD +
9	RI	

Serial Port Information

RS-232/RS-485 (note that RS422 option has to be installed for this strapping to be valid):


on - enable COM C 100 ohm terminating resistor in RS-485/422 mode
off - disable COM C 100 ohm terminating resistor in RS-485/422 mode
(note: for RS-232 mode, leave strap off.)
on - COM C is RS-232
off - COM C is RS-485/422
on - COM D is RS-232
off - COM D is RS-485/422
on - enable COM D 100 ohm terminating resistor in RS-485/422 mode
off - disable COM D 100 ohm terminating resistor in RS-485/422 mode
(note: for RS-232 mode, leave strap off.)

SF12 Definition

The RTS signal on COM C and COM D is used to turn on and off the RS-422/RS-485 driver. The state of RTS is controlled by bit 1 of the UART Modem Control Register (MCR). When bit 1 of the MCR is set to a 0, the RS-422/RS-485 transmitters are on. When bit 1 of the MCR is set to 1, the RS-422/RS-485 transmitters are tri-stated. . Many of the communications programs, provided with a standard PC, do not toggle RTS correctly for RS-422/RS-485 operation with SBC-PII.

RS-422: RS-422 requires that the driver be on at all times. If you are not writing your own communications program to control RTS, then you will want to disable the RTS signal from COM C and/or COM D by removing the shunt from SF3 and/or SF4.

RS-485: RS-485 requires the RTS signal to control the driver so the shunt must be installed.

RS-232: RS-232 requires the RTS signal for signaling, so the shunt must be installed.

The factory default is both RTS signals is enabled (RS-232 default).

Parallel Port (J20)

A multi-mode high performance parallel port with base address of 0X0100h-0X0FFCh, 11 IRQ and four DMA options. In standard mode it provides bi-directional SPP, in enhanced mode it is EPP V1.7 and EPP V1.9 compatible, and in high-speed mode is ECP, IEEE1284 compliant.

The connector is a 13 x 2 straight 0.1" center header.

Signal	Pin	Pin	Signal
/STB	1	2	/AFD
Data 0	3	4	/ERR
Data 1	5	6	/INIT
Data 2	7	8	/SLIN
Data 3	9	10	Gnd
Data 4	11	12	Gnd
Data 5	13	14	Gnd
Data 6	15	16	Gnd
Data 7	17	18	Gnd
/ACK	19	20	Gnd
Busy	21	22	Gnd
PE	23	24	Gnd
SLCT	25	26	Reserved

VGA Video Connector

A VGA monitor can be connected to the Marathon Computer products if an external monitor is required during the development process. This option is not available on the Marathon Monitor products.

Pin	Function
1	Red
2	Green
3	Blue
4	
5	Gnd

Pin	Function
6	Gnd
7	Gnd
8	Gnd
9	
10	Gnd

Pin	Function
11	
12	DDC Data
13	Hsync
14	Vsync
15	DDC Clk

Ethernet (J10)

The SBC-PII provides an industry standard RJ-45 connector, J10, for 10 Mb/s and 100 Mb/s operation. It supports N-way auto-negotiation, full duplex flow control in compliance with IEEE 802.3x. It uses PCI bus master data transfers with programmable PCI burst size. Includes 16K boot ROM, interface to 9346 (64 x 16-bit EEPROM) for storage of resource configuration and ID parameters and large independent Rx and Tx FIFOs.

Three levels of power down modes: sleep, power-down with internal clock running, and power-down with internal clock halted. Digital and Analog loopback capability.

Unshielded twisted pair (UTP) cables connect the SBC-PII to other computers, hubs and bulkhead connectors. SBC-PII supports most popular Ethernet networks.

The Ethernet Controller option used on SBC-PII is a "Plug and Play" device and resources can be set by program control. The exact resource utilization varies with system configuration. The Ethernet controller will "seek" available resources. In addition, the Ethernet Controller can be disabled through user settings in the BIOS Setup and in the Windows 95/98 Control Panel | System | Device Manager.

10/100baseT Connections

Pin	Signal
1	Transmit +
2	Transmit -
3	Receive +
4	N/C
5	N/C
6	Receive -
7	N/C
8	N/C

Ethernet LEDs (J9)

The Ethernet LED Connector, J9, provides an Ethernet Activity LED connections for remote display of status. The connector is a 3 x 1 straight locking 0.1" center header.

Pin	Function
1	Transmit/Receive LED
2	Link LED
3	+5Vdc

Connect the cathode of one LED to connector pin 1 and another to connector pin 2, and both of the anodes to +5 Volts. The Link LED will be ON whenever a link has been established and the Transmit/Receive LED will flash when any data transmission is completed.

Interrupt Assignments

The following table lists the SBC-PII I/O interrupt assignments. The interrupts used are PC/AT compatible.

If using a Plug & Play operating system, interrupts will be assigned by the operating system based on the peripherals installed. The Plug & Play interrupts can be determined through the operating system utilities.

Level	Function	Software Vector
NMI	Parity I/O Channel Check	2H
0	Timer	8H
1	Keyboard (buffer full)	9H
2	Controller Cascade	AH
3	Serial Port COM B	BH
4	Serial Port COM A	CH
5		DH
6	Diskette Controller	EH
7	Printer Port LPT1	FH
8	Real-Time Clock	70H
9		71H
10	USB Controller	72H
11		73H
12	Ethernet Controller	74H
13	Math Co-processor	75H
14	IDE Controller	76H
15		77H

The industry standard IRQ assignments for COM C and COM D are IRQ4 and IRQ3 respectively. CMOS setup on SBC-PII follows this standard and defaults COM C and COM D as IRQ4 and IRQ3 when shipped from the factory. This causes a conflict in Windows95/98 and Windows NT because COM A and COM B claim those IRQs as well. Each COM port prefers its own IRQ.

To change the IRQ settings for COM C and COM D, first change the values stored in CMOS using the BIOS Setup Program (press F2 during POST before the operating system starts to load). Then change the IRQ settings in Windows 95/98, Control Panel | System | Device Manager. In Windows NT the setting can be changed in Control Panel | Ports. SBC-PII systems have a Plug & Play option that can be used for COM C and COM D eliminating need for hand configuration.

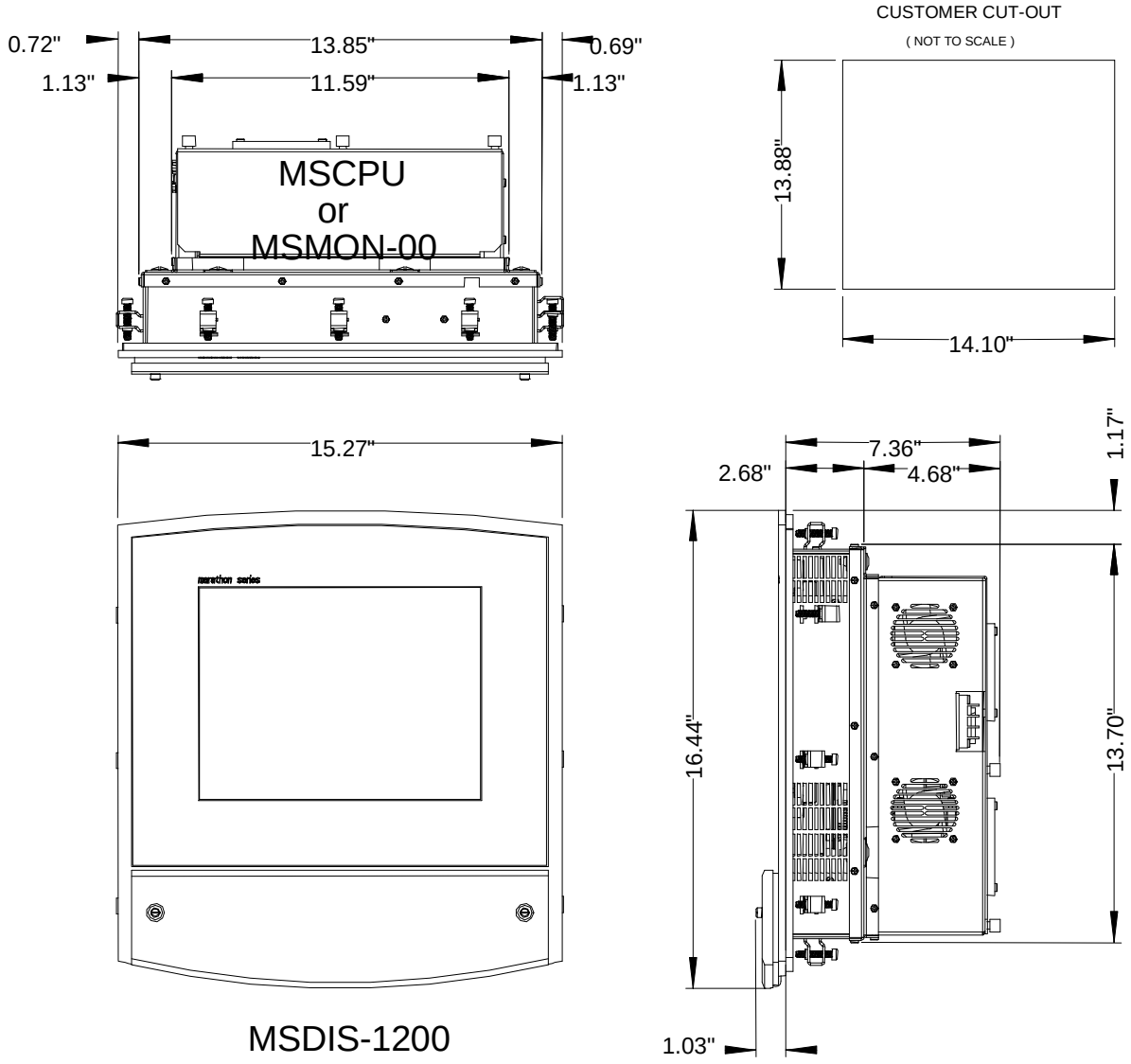
Chapter 7 Dimensions

The following drawings contain the dimensions for all display packages, CPU modules and Video Electronics modules. Make sure you select the correct panel cutout for your model display.

Each Marathon Display is assigned a model number, based on the display size and whether it has the optional keypad.

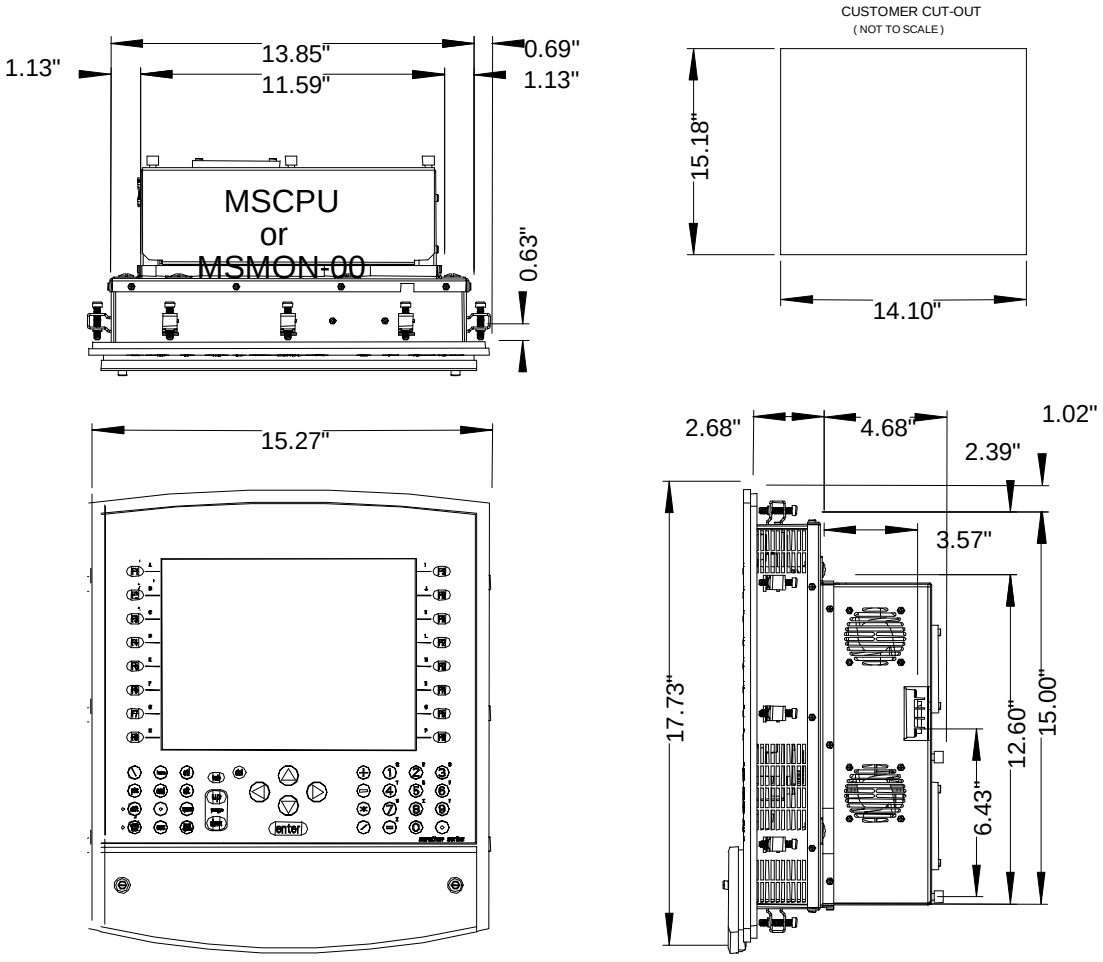
MSDIS-1200	12.1" SVGA, Touchscreen
MSDIS-1210	12.1" SVGA, with Keypads and Touchscreen
MSDIS-1500	15.0" XGA, Touchscreen
MSDIS-1510	15.0" XGA, with Keypads and Touchscreen
MSDIS-1800	18.1" SXGA, Touchscreen

12" Display, No Keypads, Standard Back CPU or Monitor Video Electronics Module



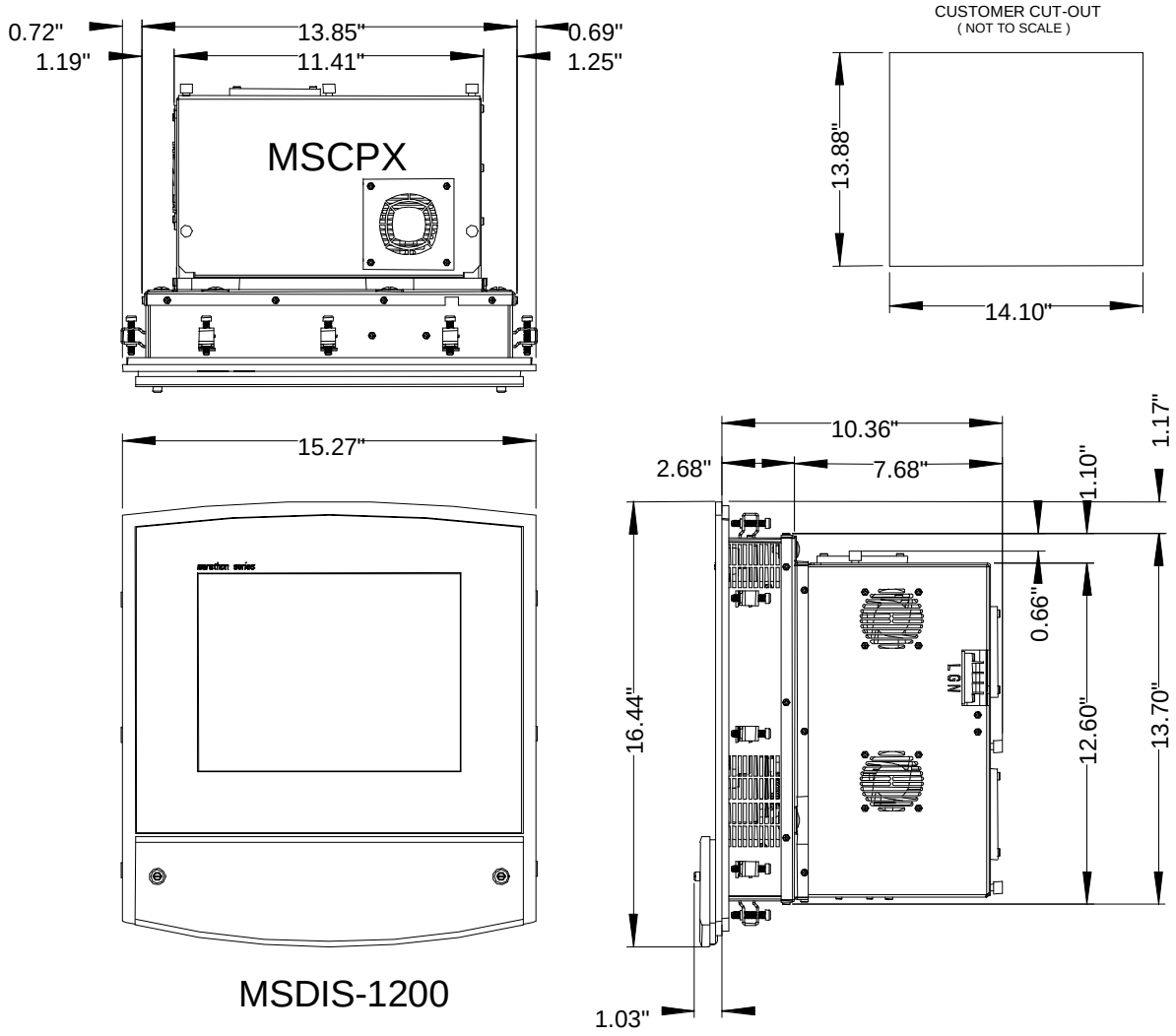
MSDIS-1200

12" Display, Keypads, Standard Back CPU or Monitor Video Electronics Module

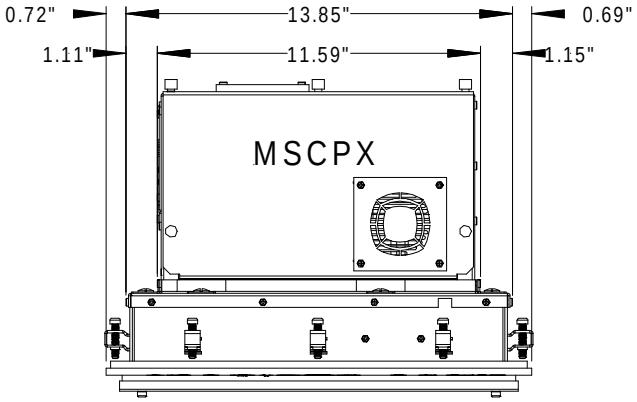


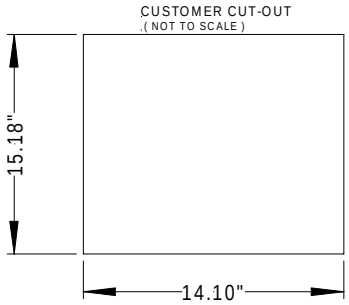
MSDIS-1210

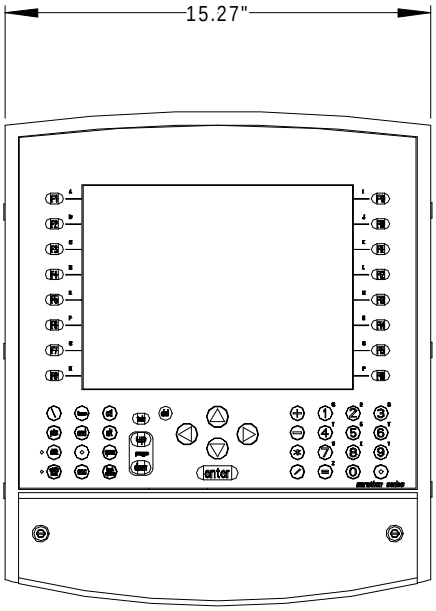
12" Display, No Keypads, Expanded Back CPU



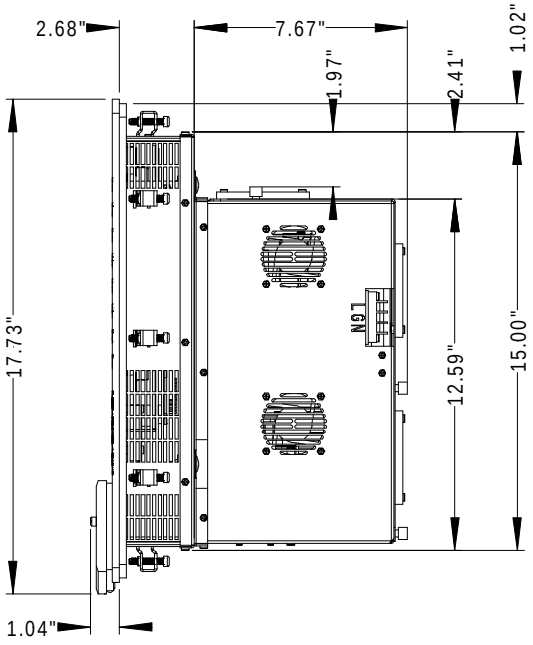
12" Display, Keypads, Expanded Back CPU



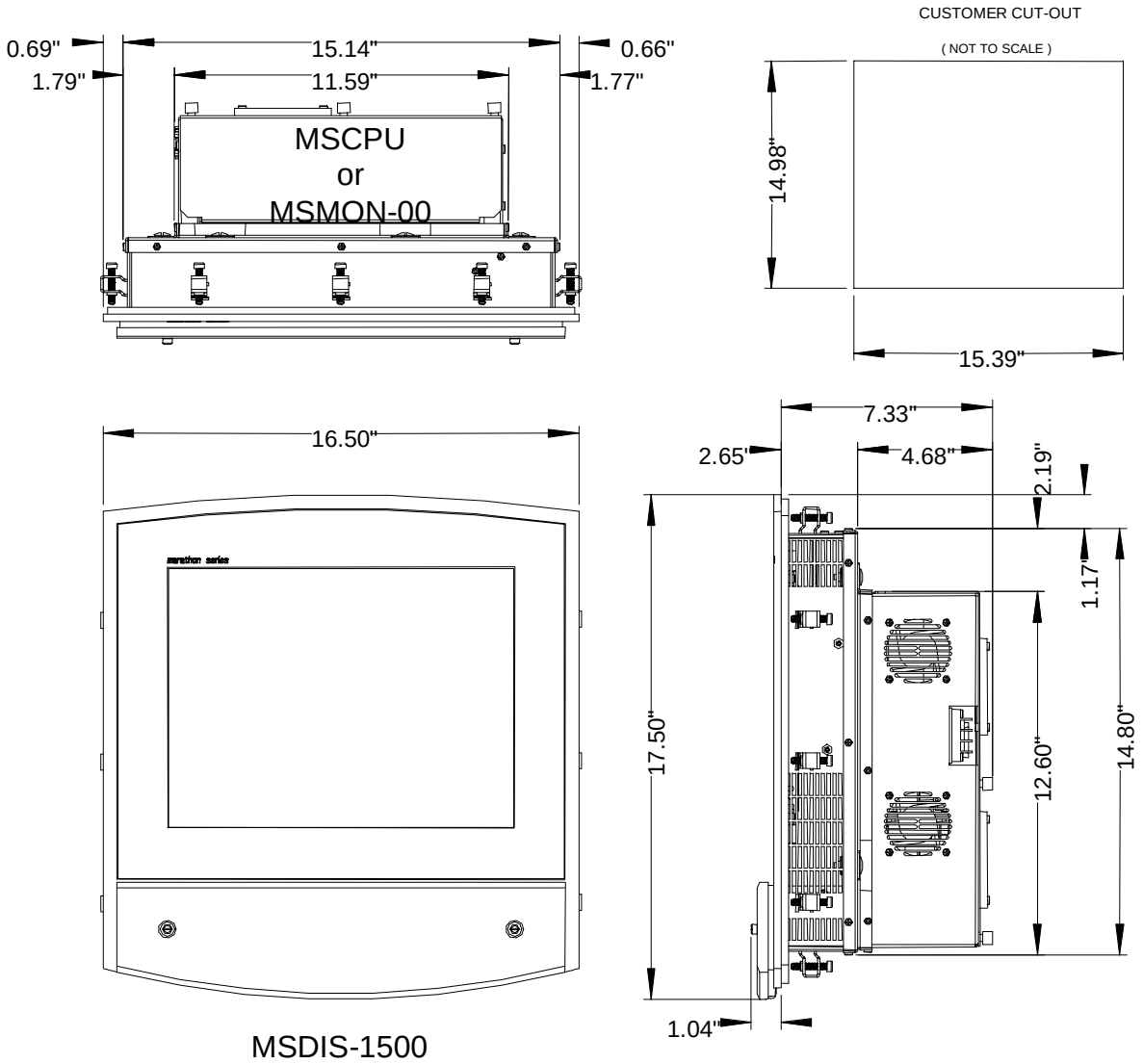




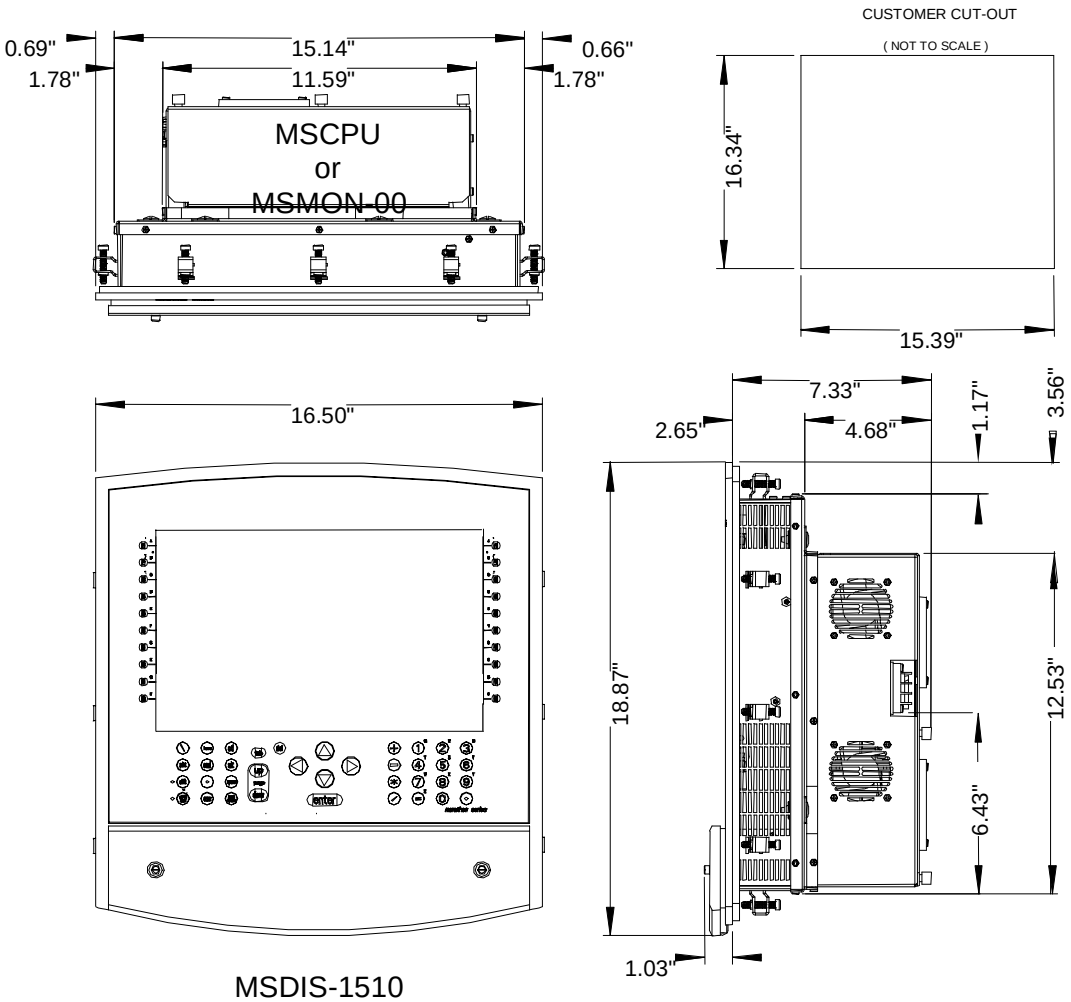
MSDIS-1210



15" Display, No Keypads, Standard Back CPU or Monitor Video Electronics Module

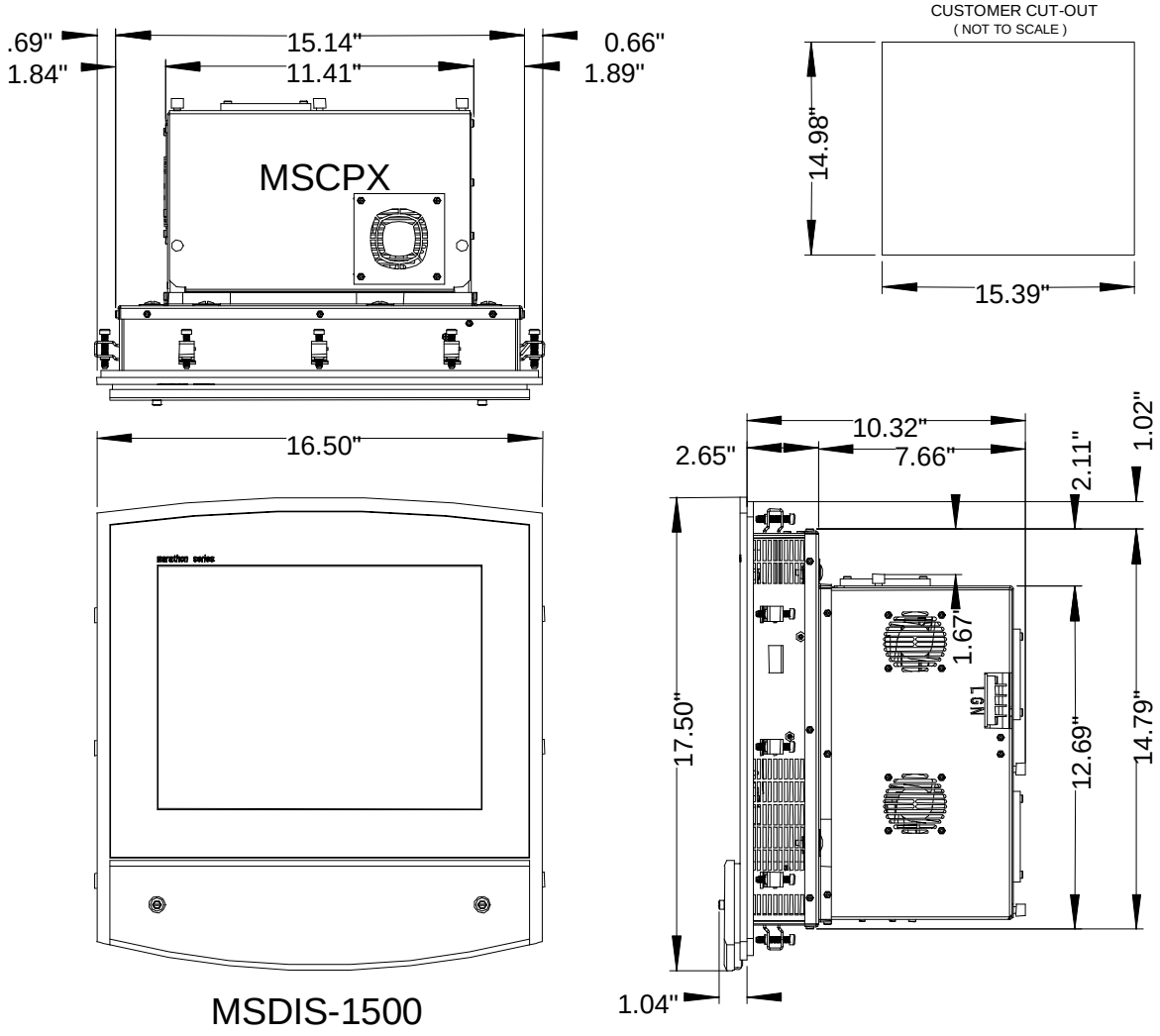


15" Display, Keypads, Standard Back CPU or Monitor Video Electronics Module

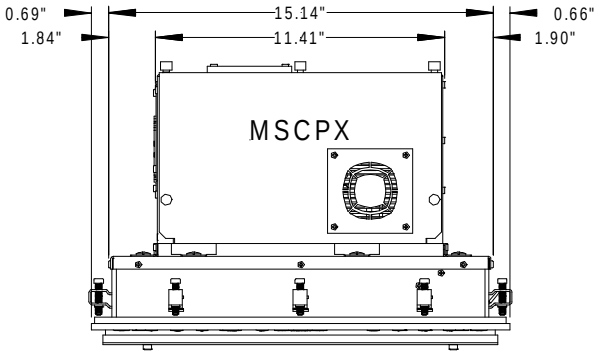


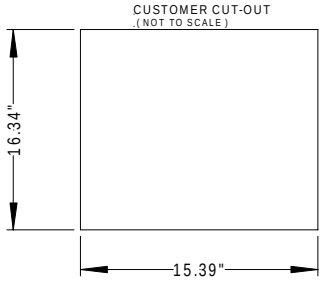
MSDIS-1510

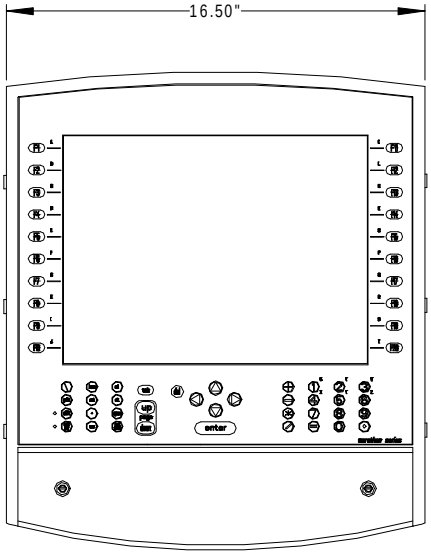
15" Display, No Keypads, Expanded Back CPU

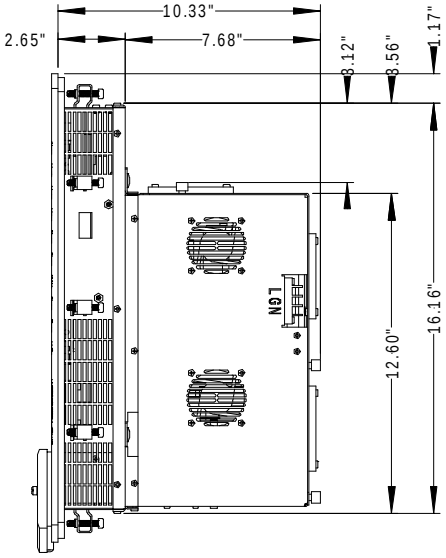


15" Display, Keypads, Expanded Back CPU



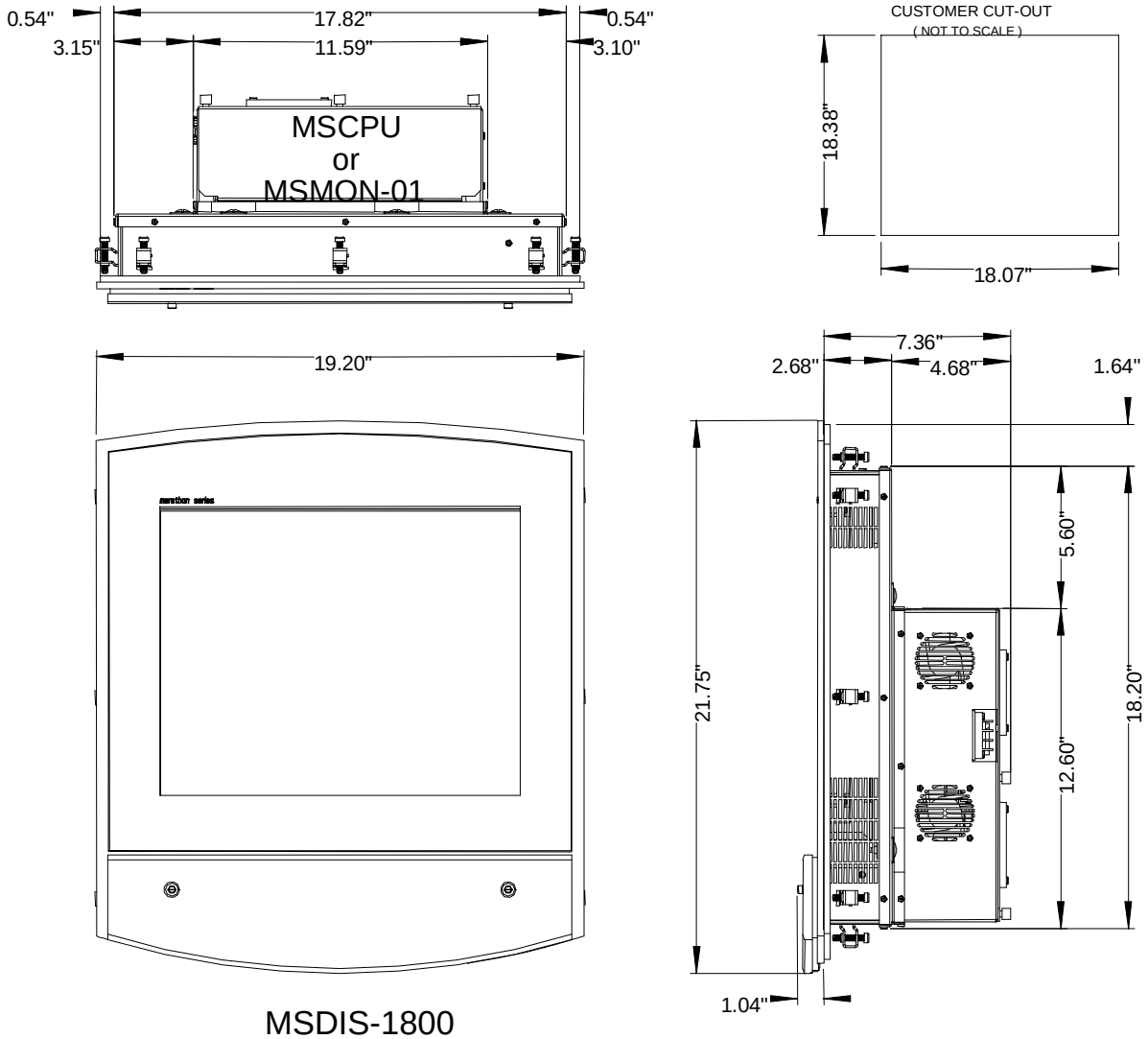






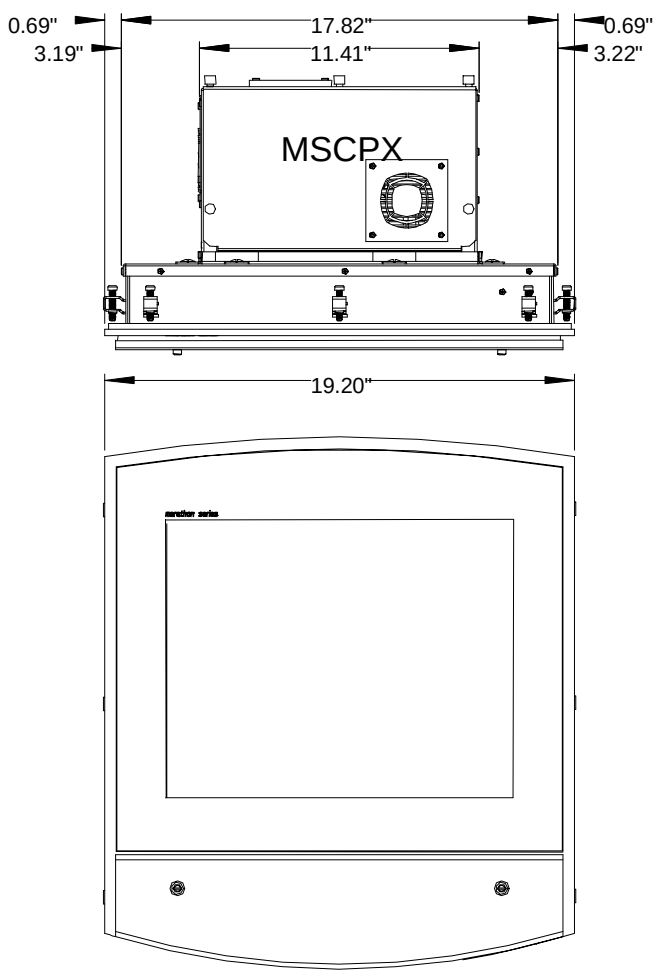
MSDIS-1510

18" Display, No Keypads, Standard Back CPU or Monitor Video Electronics Module

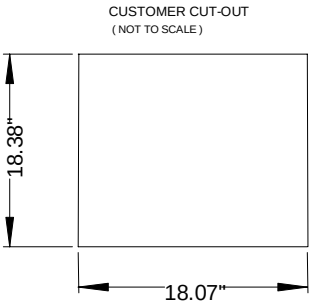


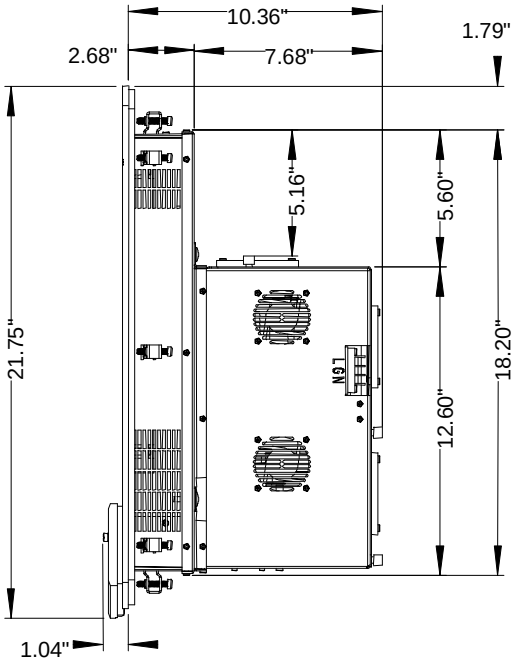
MSDIS-1800

18" Display, No Keypads, Expanded Back CPU



MSDIS-1800





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